The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 10 CHICAGO, ILLINOIS SEPTEMBER 4, 1915

CUTANEOUS CANCER OF THE EXTREMITIES *

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Skin cancers may arise from different layers of the surface epithelium, from different structures in the skin, such as hair follicles, sebaceous glands, and sweat glands or ducts, or from congenitally displaced epithelial structures. There are really but four important groups of cutaneous carcinomas, the prickle-celled, the cuboidal-celled, the basal-celled and the nevocarcinoma or malignant mole. The neoplasms arising from the hair follicles take on the structure and peculiarities of the basal-celled group, and the growths originating from the glands are very rare, although they do occasionally occur.

The prickle or spino-celled cancers must be sharply divided into two groups, cancer proper and the malignant wart. The former are to be clinically distinguished by their rapid growth, their deep infiltration, their rough, almost verrucose surface, and their tendency to metastasize to the lymph glands. On section the cancerous acini are large and appear as fine white lines radiating downward. The latter are distinctly wart-like from the onset, may be more or less pedunculated, and have no cancerous infiltrate at the base, although there is often an inflammatory hardness there. Microscopically both are characterized by the large size of both the alveoli and of the individual cells, and by the fact that epithelial whorls or pearls are usually formed. The cells usually stain better with an acid than with a basic dye.

The cuboidal-celled tumors are difficult to distinguish in the gross from the preceding group. Microscopically the alveoli are large and the cells are also large, but never form epithelial pearls. These growths act very much as do the prickle-celled ones, for they frequently form growths in the glands.

The basal-celled carcinomas grow slowly, have a smooth surface, do not deeply infiltrate the tissues, and when sectioned fail to show large alveoli. On microscopic examination the cels are small and stain intensely with the basic dyes. for further details of this group, Krompecher's monograph[1] may be consulted.

The nevocarcinomas or malignant pigmented moles are not universally conceded to be epithelial in origin, as Fordyce[2] has well pointed out. Nevertheless, since certain of these tumors have been shown to be epithelial,[3] and since practically none of them have been proved to be of mesoblastic origin, it seems only right to include them in this study. As is now well known, these neoplasms usually arise from pigmented moles that have been the subject of irritation, and speedily form metastatic nodules in the skin, viscera and glands.

Because of the failure to distinguish between the various types of cutaneous cancer, many of the older articles on carcinoma of the extremities are practically worthless from a modern point of view. Howard Fox[4] has recently reported an interesting case of cancer of the hand which metastasized to the mediastinal glands, and has reviewed the literature. After studying various articles, notably those by Heimann,[5] Gurlt,[6] von Winiwarter,[7] Neumann,[8] Bulkley and Janeway,[9] von Brunn,[10] Volkmann[11] and Franz[12] he comes to the conclusion that cancer of the limbs is comparatively a rare disease as compared to cutaneous cancer in other portions of the body. Fox, referring to cancer of the hand, further says: "In spite of the malignancy of these cases from a microscopical standpoint, there can be no doubt that clinically they are relatively benign, generally running a slow course, and only late, if at all, invading the lymphatic glands." On the other hand, in a discussion[13] of this paper both Schalek and Corlett reported cases in which metastases had occurred, while Wile called attention to the fact that cancers originating in arsenical keratoses usually metastasized.

Bloodgood[14] has consistently contended that the lymphatic glands should be removed in all cases of prickle-celled cancer of the body, no matter where located, but especially on the limbs, for here it is always easy to remove the draining lymphatics. Steiner,[15] writing from the clinic of Dollinger, states that a routine practice is made of removing lymph glands in all cases of cancer of the extremities. A summary of the literature would seem to indicate that

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Krompecher: Der Basalzellenkrebs, Jena, Fischer, 1903.

2. Fordyce, John A.: Melanomas and Some Types of Sarcoma of the Skin, THE JOURNAL A. M. A., Jan. 8, 1910, p. 91.

3. Gilchrist: Jour. Cutan. Dis., 1899, xvii, 117. **Waelsch**: Arch. f. Dermat. u. Syph., 1900, xlix, 249. Whitfield: Brit. Jour. Dermat., 1900, xii, 267. Darier: La pratique dermatologie, iii, 1903. Schalek: Jour. Cutan. Dis., 1900, xviii, 147. Ravogli: Jour. Cutan. Dis., 1901, xix, 1.

4. Fox: Jour. Cutan. Dis., 1915, xxxiii, 22.

5. Heimann: Arch. f. klin. Chir., 1898, lvii, 911.

6. Gurlt: Arch. f. klin. Chir., 1880, xxv, 421.

7. Von Winiwarter: Beiträge zur Statistik der Carcinome, Stuttgart 1878.

8. Neumann: Beitrag zur Kenntnis der Extremitäten-Krebse im Anschluss an zwei Fälle der Freiburger Klinik, Inaug. Diss. Freiburg im Breisgau, 1911.

9. Bulkley and Janeway: Med. Rec., New York, lxxiii, 465.

10. Von Brunn: Beitr. z. klin. Chir., 1903, xxxvii, 227.

11. Volkmann: Samml. klin. Vortr., 1889, No. 102.

12. Franz: Beitr. z. klin. Chir., 1902, xxxv, 171.

13. Schalek and Corlett: Jour. Cutan. Dis., 1915, xxxiii, 29.

14. Bloodgood: Progressive Med., December, 1904, 1907, 1908, 1912.

15. Steiner: Deutsch. Ztschr. f. Chir., 1906, lxxxii, 363.

cutaneous cancers of the extremities are not especially common, that they are more common on the lower than on the upper limbs, that they always follow some precancerous conditions, that they are usually of the prickle-celled type, that they are rare on the palms of the hands, and that when occurring on the backs of the hands they are relatively benign. Regarding their tendency to form metastases there is considerable diversity of opinion.

With a view of clearing up the last point, which is of great practical importance, especially now that radium, the Roentgen rays, fulguration, desiccation, and similar nonoperative procedures are making great bids for the treatment of these conditions, I present the statistics shown in Table 2, derived largely from Dr. Bloodgood's surgical-pathologic laboratory of the Johns Hopkins Hospital, from the surgical wards of the Freedman's Hospital and from my own practice.

TABLE 1.—DISTRIBUTION ON UPPER AND LOWER LIMBS OF THE VARIOUS TYPES OF CANCER

	Prickle	Malignant wart	Cuboidal	Basal	Malignant mole
Upper limb	19	5	0	4	1
Lower limb	18	0	4	6	1
Total	37	5	4	10	2

There were a total of fifty-eight cases (Table 1). It will readily be seen that the commonest tumor is the spino-celled one, and that the basal-celled one ranks next. Malignant warts are much commoner on the upper than on the lower extremity, while the reverse is true of the cuboidal-celled carcinomas. Cancer of the upper limb is just about as common as is cancer of the lower limb.

Studying the prickle-celled growths, we find that they sprang from the following precancerous dermatoses, and that metastases occurred as shown in Table 2.

TABLE 2.—METASTASES OCCURRING IN PRICKLE-CELLED GROWTHS

Origin	Total Cases	Cases Followed Three Years	Metastatic Cases
Roentgen-ray dermatitis	2	2	2
Scar of burn	8	5	3
Scar of trauma	6	4	1
Ulcer	2	0	?
Wart	7	2	2
Senile keratosis	2	1	0
"Pimple"	4	3	1
Arsenic keratosis	1	1	1
Blastomycosis	1	1	0
Bone sinus	1	0	?
Undetermined	3	1	1
Total	37	20	11

The observation that cancer originating from Roentgen-ray dermatitis and from arsenic keratosis usually metastasizes is borne out here. Cancer springing from the scars of burns has given a rather high percentage of metastatic growths.

TABLE 3.—METASTASES WITH REFERENCE TO LOCATION OF PRIMARY GROWTH

	Total Cases	Cases Followed Three Years	Metastatic Cases
Finger	4	2	2
Back of hand	8	3	1
Wrist	1	0	?
Forearm	1	0	?
Elbow	2	1	1
Upper arm	3	2	1
Foot	2	2	1
Ankle	3	1	0
Lower leg	7	4	2
Knee	2	2	1
Thigh	4	3	2

With respect to the influence that location of the primary growth has on the liability to metastatic formation I present Table 3.

In such a small series of cases it is impossible to determine just what influence position has on the liability toward metastasis, but it would appear to have very little. The high percentage of metastases in the followed cases is notable. It will probably be objected that most of these cases were surgical ones, and that they were severe cases and of long duration. Now, as a matter of fact, in six of the metastatic cases, the primary cancerous changes had been present for three months or less. In one notable case there was a cancer of the lower leg that had existed for two months. Under divided doses of the Roentgen rays the primary growth healed and stayed healed, but five years later metastases developed in the inguinal glands and the patient succumbed. In the other ten instances recurrence in the glands followed amputation in five cases and local surgical removal in five. The nine patients who stayed cured for more than three years were all subjected to local operation alone.

A study of these few figures should clearly show that prickle-celled cancer of the skin is comparable to cancer of the breast, tongue or lips, and just as no good surgeon would think of treating a true cancer of these organs by local removal alone, so should he shrink from the mere local removal of an analogous condition of the cutis. In many instances it is impossible to tell the exact nature of a cutaneous cancer. Here the correct procedure is undoubtedly to excise the entire growth and then make a study of it. To attempt to cure a malignant neoplasm of the limbs without first ascertaining its nature is both foolhardy and dangerous, to say the least, and will undoubtedly result in the sacrifice of many lives.

There were four cases of cuboidal-celled cancer, one of which originated from a varicose ulcer of the leg and was cured by the cautery. One developed on the scar of a bed sore on the thigh and was cured by local excision. Another originated in a senile keratosis on the thigh and recurred in the inguinal glands seventeen months after local excision. The last occurred in the scar of a trauma on the thigh, and promptly recurred in the inguinal glands after local excision. All growths were of less than one year's duration. All were in women. It is plainly evident that cuboidal-celled cancer is analogous to spino-celled cancer in the way that it metastasizes, and that it should be treated accordingly.

There were five cases of malignant warts, three on the back of the hand, one on the wrist and one on the forearm. All originated in warty growths. Bloodgood,[16] in a careful study of malignant warts, comes to the conclusion that they never metastasize and that complete local removal is sufficient to effect a cure. Yet in one case in this series metastasis and death did follow a local operation, probably not a complete one. Inasmuch as these growths are more common on the back of the hand than elsewhere, inasmuch as they show a spino-celled structure, and inasmuch as they very rarely metastasize, it is probable that those who have stated that cancer of the hand is a benign affection have had most of their experience with this variety of tumor.

There were ten basal-celled cancers, which arose from the following dermatoses:

Ulcer	6
Scar or burn	1
Pigmented mole	1
"Pimple"	1
Nodule	1

16. Bloodgood: Progressive Med., December, 1904, p. 147.

They arose in the following areas:

Finger	1
Hand	1
Upper arm	2
Ankle	1
Lower leg	4
Thigh	1

In one remarkable case the glands later developed metastatic growths that showed all of the peculiarities of a spino-celled carcinoma. So far as known there were no other metastases in this group.

In two instances there were multiple melanotic growths, secondary to pigmented moles. One occurred on the arm of a woman who had suffered but a single trauma to a pigmented mole. This immediately ulcerated and was excised, but promptly recurred. During the next five years there were a number of local operations. She then entered the hospital with a mass of inoperable glands in the axilla, but with no signs of metastatic growths in the body. It is more than probable that a complete early operation, including the axillary glands, would have resulted in permanent cure. The other instance occurred in a negro man, this being probably the only case on record of a malignant mole in one of this race. The primary growth was in the sole of the foot. There were metastases both to the glands and to the lungs, and death speedily ensued.

CONCLUSIONS

1. Carcinoma of the skin of the limbs is not a common affection.
2. The majority of skin cancers arising in these locations are prickle-celled neoplasms, and the majority of these metastasize, some at an early date.
3. Inasmuch as a certain diagnosis can only be made in the early cases by the gross or microscopic appearance, and inasmuch as it is usually deemed unsafe to excise a bit of tissue for examination, it is plain that the proper treatment is to excise the growth in toto and make the diagnosis from the entire growth. If it is found to be of a cuboidal or spino-celled variety the neighboring glands should be removed.
4. The basal-celled growths can be treated by local removal with perfect safety.
5. It is possible that the prognosis in some cases of malignant mole is not absolutely bad if a wide local and glandular operation be done at the onset.
6. Malignant growths always arise from a preexisting abnormality, so are usually preventable.

The Rochambeau.

ABSTRACT OF DISCUSSION

DR. A. RAVOGLI, Cincinnati: This paper has a great deal of practical interest on account of the frequency with which we see these growths on the hands. I see very often—especially in farmers—the beginning of epithelioma on the back of the hands, between the thumb and index finger, on the metacarpal region of the hand. Sometimes they are of very slow growth, and take a long time until they reach a certain point, after which they grow very fast. As the author stated, they involve the epitrochlear and subaxillary glands in a brief time.

The question of blastomycosis has to be overruled. I had a case sent to me as carcinoma of the hand, and I found it necessary to remove all the affected tissues, which I did; instead of having a resistant tissue, there was only a decayed condition, like a poultice. I found under the microscope that this was a case of blastomycosis, which has a very deleterious action in the tissues, and sometimes affects the subaxillary glands. Sometimes I have seen the epithelioma of the back of the hand preceding that of the lower lip. I find there is some relation between those parts by rubbing the lips with the back of the hands. In a gentleman from Indiana with an epithelioma, first on the back of the hand, and then on the inferior lip, I obtained perfect recovery. I removed the growth with a curet and cauterized it with my method. Then he was treated with Roentgen rays. He died at about 74 or 75 years of age, and the reproduction of the epithelioma was not verified. When we put the knife in these growths we open the blood vessels and make possible the absorption of cancerous cells into the blood or lymph circulation, or underneath the tissues. Therefore, according to my experience, the best thing is scraping with a sharp curet the epithelioma, and after scraping, the use of the caustic.

Dr. Sherwell claims great good with strong nitrate of mercury. I advocate my method of compound solution of cresol, formaldehyd and perchlorid of iron, mixed in the same proportions and applied on a tampon of cotton for five or ten minutes. The formaldehyd has a peculiar cornifying action on the epitheliomatous cells, the compound solution of cresol dissolves the plasma cells, which involve the cancerous elements forming the little nests; and then the perchlorid of iron stops the lymphatic blood and vessels, preventing absorption. In the case of the Indiana farmer I had splendid results with this method.

DR. RICHARD L. SUTTON, Kansas City, Mo.: This paper of Dr. Hazen is an extremely interesting one, and contains far more than would appear on first thought. He has his own statistics and those of Dr. Bloodgood. They are not clinical statistics, but statistics backed by pathologic findings.

I have seen but few cases of cancer of the limbs. They are rare in the Middle West, as well as elsewhere. But carcinoma of the dorsal surface of the hands is fairly common. In the majority of instances the lesions are of the squamous variety, and in my experience secondary involvement of the lymph nodes is not unusual. Consequently the only safe plan of treatment is radical excision, followed, if the subsequent histologic examination and symptoms should indicate it, by removal of the neighboring lymph nodes. Superficial cauterization with carbon dioxid snow, silver nitrate, and similar agents is worse than useless; it is criminal. Roentgen and radium therapy may be employed as an adjuvant measure, but if the operation is properly performed these agents will not be needed. Above all, I would suggest that one be exceedingly careful in dealing with these cases. Early and radical treatment is indicated, and there is far more danger of undertreatment than of overtreatment.

DR. DOUGLASS W. MONTGOMERY, San Francisco: Epithelioma of the extremities is not frequent. Dr. Culver and I have had some cases, but we have not had any with metastases. One patient I saw not long ago was of peculiar interest diagnostically. The lesion lay behind the external malleolus, and when the patient came to me first some years ago it was very small and looked like a small ulcus cruris. Recently I was called to see the patient in consultation, and the ulcer had grown in the meantime and resembled a gangrenous ulcer of the leg of the fulgurating type, due to streptococcic infection. I advised treatment in accordance with this opinion.

I was subsequently again called in consultation, and as I examined the lesion it struck me that its border was altogether too rolled and too large for ulcus cruris, and it gradually dawned on me that the lesion was an epithelioma. Its treatment presented a very grave question. To cut it out as recommended here today would involve such loss of tissue that an amputation would be preferable, and yet an amputation for such a lesion would not commend itself to the patient. Nevertheless, we are compelled from Dr. Hazen's findings to accept the fact that these growths are much more dangerous than I, for one, ever realized.

DR. HARRY E. ANDERSON, San Francisco: The fact that half-way measures in the treatment of these conditions are extremely dangerous cannot be too strongly repeated and emphasized. I think most of us agree in the use of the

Roentgen ray as intensively as possible. Most of the cases of complicated epithelioma are in patients who have had the early lesion treated with the half-way measures advocated from time to time.

Dr. George M. MacKee, New York: I agree that the best way to treat a malignant epithelioma is by excision. The knife, however, should not enter the growth. If there is the slightest suspicion that malignant cells have been left in situ either radium or the Roentgen ray should be employed as a postoperative prophylactic measure, and this treatment should also be applied to the neighboring lymphatics. The fact that some cases of malignant cancer will respond to radium or the Roentgen rays without the aid of surgery certainly speaks in favor of using these agents postoperatively. It should be remembered that the basal-cell epithelioma is sometimes fatal. I have seen three cases end in death. I have never seen a basal-cell epithelioma change its character and become a squamous-cell growth. I have personally seen only one case of basal-cell epithelioma on the back of the hand. This was in a young man who had taken arsenic for several years. He suffered from arsenical pigmentation, palmar keratoses and had about fifty superficial basal-cell epitheliomas scattered over the body.

Dr. Everett S. Lain, Oklahoma City: This has been especially interesting because Dr. Hazen, Dr. Sutton and Dr. MacKee are leading writers on epithelioma, and the statistics given are corroborative of my own in treating epitheliomas of the extremities. My treatment of this disease on the hands has not been very satisfactory. In fact, in my paper I say this location on the body is most unsatisfactory. The first step, I believe, is to block the absorbing channels, the blood vessels, with the Roentgen ray, and then turn the patients over to the surgeon.

Dr. Howard Fox, New York: In regard to the frequency of cancer of the extremities, we have heard the statistics of Heimann, who showed that out of twenty odd thousand cases of cancer in general, only 207 affected the extremities. That is indeed a small proportion. My study of a year ago was confined to cancer of the hand. I found that cancer of the hand is microscopically malignant, though it seems to run a comparatively benign course clinically. My conclusions were based on a résumé of the literature, and not from personal experience, as we see few cases of cancer of the hand in New York. I agree with Dr. Sutton that in possible cases of cancer of the hand or extremities a microscopic examination should always be made to avoid mistakes in diagnosis, as in my case, in which the possibility of an epithelioma did not occur to any of those who examined the lesion.

Dr. H. H. Hazen, Washington, D. C.: I think carbon dioxid snow is one of the most abominable things ever brought out. I have seen four cases on which snow had been used, and each one was made worse, although pronounced a cure by the men who applied it. No more carbon dioxid for me in the treatment of cancer.

I think probably dermatologic excision with a knife would open up the channels, but not a surgical excision. By a proper surgical excision I mean cutting one-half an inch outside the malignant area, and not getting the knife into any of the cancerous material. I fear that dermatologic operations are less radical.

Dr. Ravogli referred to the curet and cauterization with nitrate of mercury. Dr. Sherwell admits that he has not followed these cases, but thinks he has had about 10 per cent. of recurrences.

We do not follow our cancerous cases as we should. In Bloodgood's clinic, there were three or four cases which were curetted and cauterized afterward. We tried to trace them up through the physicians who sent them in, but none of them had followed them up.

There is one way of taking out a cancer when there is little margin, and that is by the actual cautery, as in cancer of the lip and tongue. I think that is preferable to the knife, and you have material for pathologic study. We do not want to produce any larger scar than necessary, but the cure is many times more important than the cosmetic result.

I want to make it plain that we must distinguish between prickle and basal-celled neoplasm. The latter can be removed locally, and the former should be so treated as to block the migration of the cancer cells. The statement that basal-celled growths become malignant can be explained by the fact that cuboidal-celled tumors are often mistaken for basal-celled ones, and also that a basal-celled tumor may occasionally change in type.

SALVARSANIZED SERUM IN SYPHILITIC NERVOUS DISEASE

SOME SALIENT FACTS: THE METHOD, THE DRUG, THE RESULTS *

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The clinical history of syphilis with its therapy is in the process of making, and is greatly in need of restating. Especially is this true of nervous syphilis. The reports of many investigators are so incomplete, so lacking in scientific accuracy, as to cloud their findings and give rise to great confusion and difference of opinion. Paucity of experience, the failure to follow lines of procedure marked out by previous well-known and competent investigators, substituting therefor personal and theoretical modifications, are all important factors in the production of this deplorable condition. There are but few Noguchis or Marinescos, few Swifts and Ellises.

There must be mutual endeavor; a cooperation of effort, so to speak, along definite lines among those interested in the therapy of syphilitic nervous diseases, if order is to come out of chaos and definite and reliable data be obtained.

Mattauschek found from the examination of 4,134 cases of syphilis that 3.19 per cent. of the patients infected suffered from cerebrospinal syphilis. If we believe with Robertson and Klaudner that syphilis is a septicemia, that the organism is invaded by the spirochetes within a day or so after infection, that the nervous system is involved from the beginning, and that the majority of syphilitics are essentially candidates for nervous syphilis from the very outset, the all-important thing in the treatment of this disease is the early recognition of the primary lesion. This is readily effected by the means of dark-ground illumination or a microscopic examination of the exudate of the sore, be its resemblance to a hunterian chancre never so slight. This is the psychologic moment in the treatment of syphilis.

Gibbard and Harrison have observed that relapses are more than doubled when medication is begun in the secondary rather than the primary stage, and they believe that by the employment of modern therapeutic methods syphilis may be limited to its earliest manifestations and that eventually congenital syphilis will cease to exist. A most valuable addition to our knowledge of syphilis is the significant fact that the nervous system is subject to an early spirochetal invasion. Serology has enlightened us greatly on this point. Ravaut has found an abnormal spinal fluid in 67 per cent. of his cases of secondary syphilis; Dreyfus in 80 per cent.; Robertson and Klaudner in 70 per cent.;

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Gennerich in 90 per cent.; Mattauschek in 80 per cent.; Nonne and Mantoux in 40 per cent.; Wile and Stokes in from 60 to 70 per cent., and the latter believe that in every case of secondary syphilis there is more or less involvement of the nervous system. Wechselmann states that in the majority of cases of syphilis the spinal fluid shows an increased protein content. An examination of the spinal fluid of 221 patients in the early stages of syphilis by Wechselmann, Wilhelm and Dinkelacker, showed positive findings in 158, and of these there were nervous symptoms in 98; in the 63 negative cases there were nervous symptoms in 32.

Similar investigations of the primary period have elicited equally interesting results. A pathologic spinal fluid is common; an increase in the albumin and globulin content, with or without pleocytosis, is often observed. The Wassermann reaction is the least to be relied on; a negative spinal fluid is of diagnostic value only when all symptoms indicative of nervous involvement are absolutely lacking. One of Krida's patients, with a chancre on the lips of two weeks' duration, showed a marked increased protein content in the spinal fluid.

Certain neurologic findings, such as headache, involvement of the second and eighth nerves (the latter, according to Benario, being more frequently involved in early syphilis than any of the other cranial nerves), modification of sensibility, changes in the reflexes, positive Babinski, pupils unequal and differing in their reaction, etc., are frequently demonstrable in both stages.

"The way the central nervous system is involved in early syphilis," says Coriat, "is certainly surprising, and this is also borne out by the spinal fluid tests. I am making complete neurologic examinations of all cases of constitutional syphilis, in all of its stages, without nervous complaints."[1]

The neurologic findings may, or may not, be associated with definite serologic changes. Either one of these may exist independently of the other. Quincke and Mayer consider that there is a parallelism between pleocytosis and the neurologic symptoms; the former is believed to bear a relation to the severe headaches (Jeanselme and Barbe). If the serologic changes only are present we have what Ravaut calls the "preclinical" stage of nervous syphilis, which may last for months or years before the first clinical sign makes its appearance. I have now under observation two cases in which fifteen years elapsed between infection and the first manifestation of nervous symptoms. Serology enables us to recognize this preclinical period in its incipiency when treatment is most effective.

THE METHOD

As to the best method for the use of salvarsan in nervous syphilis, the profession is hopelessly at variance. There have been too many contributions by men whose training and acquaintanceship with the more delicate methods of diagnosis were too faulty to permit of their drawing reliable neurologic conclusions. "The stage of temperate and critical criticisms of results," says Schwab, "has evidently not yet been reached." There are two modes of treatment that merit serious consideration, viz., the intensive and the intraspinal methods. The former, when given intravenously and combined with the intramuscular injections of mercury, is of unquestioned value; some believe that the results are in every way equal to those obtained by the intraspinal methods (Sachs, Strauss and Kaliski). This procedure, when practiced by the injection of salvarsan at the upper part of the nates, in the loose tissues between the subcutaneous fat and fascia (inunctions or injections of mercury being given in the intervals), may be harmless and practically painless, but in the light of the studies of Tilney and Woolsey in vital staining with solutions of trypan blue, is clearly inefficient. These investigators have shown that if solutions of this agent are injected subcutaneously or intra-arterially, the skin and thoracic and abdominal viscera stain readily while the central nervous system absolutely escapes. If the solution be injected intravenously, the stain reaches the dura and pia mater, but does not penetrate the nervous tissue. When the injection is given intraspinally, the membranes are affected as before and the dye penetrates the nervous tissues through the walls of the veins and capillaries, affecting even the epithelium of the latter. These experiments would indicate that intravenous injections of salvarsan are not sufficient in parenchymatous syphilis, however valuable they may be in luetic meningitis, endarteritis and gumma. It has also been demonstrated that diseases of the meninges and their adjacent nervous tissues are best therapeutically influenced by the employment of intraspinous methods. If, as Mott states, the cerebrospinal fluid is the lymph of the nervous system (and it has never been positively shown that it does not reach the most remote nervous tissues by way of the subarachnoid spaces and their communicating canalicular system), it is by this medium and through its channels that therapeutic agents can best be conveyed to the lesions deeply situated in the cortex.

Since affections of the meninges, such as influenzal, pneumococcic, and epidemic cerebrospinal meningitis, are not responsive to any other than subarachnoid therapy, it would seem to follow that syphilitic affections of the membranes and their adjacent nervous tissues can best be treated by the intraspinal administration of spirocheticidal drugs.

Intraspinal medication is one of the most notable of the many notable achievements of modern medicine. The intraspinal method, like every new procedure, has suffered more at the hands of its overenthusiastic friends than from the most pitiless criticism of its enemies. The conclusions of partisanship are based on the illusions of hope, not on the solid foundations of clinical and biologic fact. I can best make clear the present status of intraspinal medication by a brief review of its literature and by a few excerpts from personal communications to me from representative American workers.

Ehrlich, in his address on chemotherapy before the International Medical Congress, August, 1913, referred to the intraspinal use of salvarsanized serum as practiced at the Rockefeller Institute, as being "not only novel but suitable in so far as it obviates all possible ill effect on the sensitive central nervous system, by employing a serum obtained from the patient himself, while at the same time it is possible to apply the curative agent in sufficient quantities."

Drs. Purves Stewart and Harry Campbell both advise the treatment of nervous syphilis by intraspinal injections. "It is too early to claim," says the former, "that we possess a cure for tabes or general paralysis, but we can, in suitable cases, do a good deal toward arresting both diseases; time alone can tell whether

1. Dr. Coriat's work along this line will appear when he and Dr. Sanborn publish their results of the treatment of nervous syphilis based on over 700 injections.

such arrests are permanent." "In parenchymatous syphilis," says the latter, "the intrathecal treatment is the only one yet devised which is capable of arresting the morbid process."

Mott, in his address before the section of Neurology and Psychological Medicine of the British Medical Association at its last annual meeting, said that "the late degenerative forms of syphilis of the nervous system (and I refer especially to general paralysis) have not been cured nor even greatly benefited by any treatment with salvarsan or neosalvarsan, whether administered intravenously or intrathecally." He admitted, however, that his personal experience did not warrant his speaking authoritatively. In the ensuing discussion McDonagh stated that he had observed some remarkable results from the intraspinal injection of salvarsanized serum in cerebrospinal syphilis, but no better than he had obtained from inunctions of mercury and intravenous injections.

Turner stated that it was too soon to express an opinion, but it seemed to him that as good results were obtainable from inunctions as from intraspinal injections. Grainger Stewart believed that in nondegenerative nervous syphilis, intraspinal injections undoubtedly accomplish good, while in paresis and tabes their value was not yet clear.

Eskuchen thinks that the Swift and Ellis method does not influence the objective tabetic symptoms, that the subjective symptoms can be benefited and in some instances the disease is apparently arrested. Myerson is hypercritical in his objections to the use of salvarsanized serum; he suggests, however, that further trial be made in selected groups of cases. Krida states that it is imperative to eradicate every manifestation of nervous early syphilis, from both the clinical and the laboratory standpoints, and that it is here, where the usual methods fail, that intraspinal therapy finds its largest field.

According to Cutting and Mack, the treatment of general paresis with salvarsanized serum "may not be a solution of the problem, but the work thus far shows that it deserves a thorough trial."

"Personally," says Dr. Coriat, "I highly favor the treatment of syphilitic and so-called parasyphilitic diseases of the central nervous system with salvarsanized serum."[2]

Dr. Jelliffe says:

> There is no doubt that the Swift and Ellis method is along the right lines. My opinion is that there is much to be done in the way of perfecting the technic and that at the present time a number of new avenues are opening up, and we cannot really tell what the future is going to be. Certainly there is very little danger, although some bad result have been met with. On the whole, it is a step forward and not backward.

Dr. Sanborn says:

> I cannot state to you the attitude of the Boston men in general in regard to this treatment, but I believe those who have had any number of patients under observation think that the treatment is rational and is productive of much good and is more efficient than intravenous salvarsan alone. I have personally administered 372 intraspinal injections in private cases, and either I myself or my assistants have given a total of 720 of these injections. I have not been successful in rendering the spinal fluid negative in paresis; in tabes a negative Wassermann may be obtained in most cases if a sufficient number of treatments are given.

2. The citations made from Drs. Cotton, Coriat, Jelliffe and Sanborn are from personal communications to the writer.

There are four kinds of intraspinal medication: first, the injection of mercurialized serum, as advocated by Byrnes; second, the procedure of Swift and Ellis—the in vivo method; third, the in vitro method, viz., the direct intradural injection of neosalvarsan as practiced by Wechselmann, Marinesco, Marie and Levaditi, and Ravaut and Wile; fourth, the employment of both the in vivo and in vitro methods as suggested by Cotton and Smith.

Following along the lines of investigation laid down by Horsley and Ravaut, Byrnes satisfied himself that the intraspinal injection of mercurial salts was to be preferred to the unstable, complex arsenical preparations, and he selected the albuminate of mercury as being the most suitable for this purpose. He has reported thirty-two cases of nervous syphilis treated in this manner, and he regards it as equal in efficiency, if not superior to, salvarsanized serum. Cotton says that caution should be observed in its administration.

I believe that the clinical and serologic results thus far obtained make good the claim of efficiency for the in vivo method, and I agree with Dr. Smith that the untoward results observed in intraspinal medication are due to "the so-called later improvements and simplifications of technic," and the direct method of injection. Another year's observation but confirms the assertion of Dr. Hammes and myself before this section last June that "the preference of this method [Ravaut's] . . . over the safer and equally effectual Swift and Ellis process is to us unjustifiable and inexplicable." Sachs, Gordon and Weisenburg have during the past year reported deaths following the use of the Ravaut method. Corbus and also Fordyce advise that the Swift and Ellis procedure be the one of choice. Personally, I think the in vitro method is basically wrong; I cannot conceive it possible to inject intradurally any known arsenical compound in sufficient strength to become absolutely spirocheticidal without at the same time compromising the welfare of the patient. The arsenical preparation that will attach itself to the guest and not affect the host is yet to be discovered. Coriat believes that the good effects of salvarsanized serum are due not so much to the arsenic as to the antibodies it liberates. According to Stühmer, it is very difficult to determine whether antibodies play any additional therapeutic rôle; the good effects of the serum, he thinks, are due, not to free salvarsan, but rather to some oxidation products which by heating are separated from their loosely synthetic combination and again become active.

Cotton advocates a more strenuous therapy in the future than in the past. The small amount of salvarsan given intraspinally every two weeks he regards as effective only for a few days. It does kill some spirochetes; then in the intervening time the progress goes on and the remaining spirochetes continue to be active. During all this period the patient is deteriorating. When finally the biologic reactions become negative the subject is in a mildly demented state from which recovery does not appear probable. He advises a combination of the Swift and Ellis method and the Ogilvie modification, using the former one week and on alternate weeks the latter. Smith has recently reported twelve cases in which he had used the Swift and Ellis with a modified Ravaut method; the latter was followed by unfortunate complications after the second injection, and was discontinued. He now injects as high as 30 c.c. of undiluted serum weekly (Swift and Ellis) with a more speedy response and no ill results.

The true rôle of subdural therapy in nervous syphilis is one of prevention rather than cure. The frequent occurrence of changes in the nervous system and spinal fluid in early syphilis cannot be too strongly emphasized.

Hauptmann says that a positive Wasermann in the cerebrospinal fluid in secondary syphilis is an expression of a true syphilitic cerebrospinal disease. A neurologic and laboratory examination should be made in every case, for only by an early recognition of the nervous invasion with prompt and radical treatment can subsequent inflammatory and degenerative changes be guarded against.

THE DRUG

"Salvarsan," says Wassermann, "is in my opinion the mightiest weapon in medicine." Gibbard and Harrison state that when mercury alone was used there were 83 per cent. of clinical relapses, but with the use of salvarsan and mercury, only 3.9 per cent. had recurred. They prefer it to neosalvarsan, as they regard it as much more active in corresponding doses. According to Nelson and Haines, salvarsan has given them in nine months 64 per cent. of negative serums, whereas neosalvarsan gave 33.3 per cent., and they think salvarsan should always be used if one wishes to give his patients the best possible results in the shortest possible time. "Salvarsan is the most potent remedy," say Craig and Collins, "in our armamentarium in the treatment of syphilis of the nervous system." They believe it to be much more potent than neosalvarsan.

Wechselmann thinks that salvarsan alone should be used in the treatment of syphilis, and this conclusion is based on the observation of 45,000 injections of this drug. Ehrlich and Dreyfus prefer old salvarsan to neosalvarsan, but use the latter when a mild, nonirritating action is desired, although frequently the treatment is begun with neosalvarsan (Conzelman). Many medical men advise that mercury be administered in the intervals between the injections. Collins refers to potassium iodid as a "blighting delusion" and to the administration of mercury by the mouth as a "futility."

The relative merits of mercurialized and salvarsanized serum, are still *sub judice*. The cases in which the former have been tried have been too few and the time too short to warrant any expression of opinion. As to salvarsanized serum much can be said. According to Hough: "The researches of Ehrlich and others have shown that salvarsanized serum has a distinct spirochetacidal power, a power greater than that exercised by salvarsan itself" (Siebert). Swift and Ellis believe that "there is definite evidence that this form of treatment has a curative action on the syphilitic process."

In the light of all the evidence the diversity of opinion that still exists regarding the utility of salvarsan is most surprising. This seems to be almost as marked as when Ehrlich in 1909 first announced his discovery of this truly remarkable synthetic substance.

THE LANGE COLLOIDAL GOLD REACTION

Dr. Hammes and I have studied the colloidal gold reaction[3] in sixty cases. Eleven paretics gave the typical paretic curve, namely, a complete decolorization in the first three or four tubes with some changes in the next four—5555443200. In one paretic with an acute maniacal onset the colloidal gold solution decolorized completely in every dilution up to the tenth tube. In one case of clinical paresis with negative blood and spinal fluid, the colloidal gold reaction was negative; one case of taboparesis gave the curve for paresis. In ten cases of tabes the curve was somewhat variable, seeming to bear a distinct relation to the intensity of the Wassermann reaction.

In two cases of typical clinical tabes all reactions, biologic and colloidal gold, were negative. Five (50 per cent. of our tabetics) with positive blood and spinal fluid gave what might be called a tabetic curve, namely, 3444432000, with slight variations in the intensity. An atypical case, in which the symptoms were most suggestive of an incipient tabes or paresis, reacted in the syphilitic zone. Three tabetics gave the characteristic paretic curve.

The curve in our cerebrospinal syphilis cases, six in number, was such as occurs in the syphilitic zone. In one case of clinical cerebrospinal syphilis with a positive Wassermann in the blood and spinal fluid, the gold solution reacted negatively; in another similar case the serobiologic findings were all negative, while the gold solution reacted in the syphilitic zone. In two cases of tuberculous meningitis and one case of pneumococcic meningitis the curves were similar, namely 0123343210. In one case of pneumococcic meningitis associated with spinal syphilis of three months' duration, the curve was similar to that observed in our cases of acute meningitis.

Two cases of syphilitic endarteritis and apoplexy with positive blood and spinal fluid gave a typical paretic curve. A case of tabes associated with cerebrospinal syphilis gave an atypical curve suggestive of both. Two cases of spinal cord tumor, one a fibromyxoma in the cervical region, one a cyst in the lumbar region, gave similar curves: 0000001233. We have found in the following conditions no reaction: a case of transverse myelitis, three of multiple sclerosis, five cases of essential epilepsy, one of involutional melancholia, three normal spinal fluids, two cases of Sydenham's chorea, one subacute degeneration of the posterior columns with primary anemia, one Friedreich's ataxia, one progressive muscular dystrophy (Erb), and two alcoholics.

Treatment has produced no change worth recording on the colloidal gold curve except in three cases of tabes.

THE RESULTS

The recent statements of Schwab that "clinical improvement in paresis as a result of this treatment [Swift and Ellis method] is a thing that no one of recognized standing has as yet asserted," and of Ravine that salvarsanized serum administered intraspinally (Swift and Ellis) gives only laboratory improvement; that its chief asset is the original intravenous injection; that clinical recoveries are not reported; that patients have been made decidedly worse, and that fatalities have occurred are in the light of the following facts most amazing.

In speaking of intraspinal therapy (Swift and Ellis) as used in nine cases, Barrett says:

> Enough time has not elapsed to warrant passing final judgment: . . . but the improvement, or at least the increase in the proportionate number and length of remissions, has been encouraging *and justifies the undertaking of this treatment in all early cases.*

Dr. Blumer states that "thirteen cases of general paresis, taboparesis and tabes have been treated with salvarsanized serum *with encouraging results.*"

3. I am greatly indebted to Dr. Archibald Leitch for his painstaking care in the investigation of the Lange colloidal gold reaction.

Hough, according to Wardner, sums up the work of Swift and Ellis at the Rockefeller Institute, Myerson of the Psychopathic Hospital, Boston, and Asper of Baltimore, as follows:

> There has been marked improvement in the syphilitic inflammatory processes and in many cases the patients with tabes especially have shown pronounced clinical improvement.

Taylor of Boston, in referring to the results obtained by the Swift and Ellis method in the Neurological Department of the Massachusetts General Hospital and in a limited number of private cases, says:

> In otherwise obstinate cases of tabes the results have been encouraging. It is believed that a certain modification in the course of general paralysis may result if taken early. At times it appears that cerebrospinal syphilis yields more promptly to this than to other forms of treatment; several cases suggest the possibility of complete cure; no permanent ill effects thus far have been experienced.

Dr. Hammes and I have administered over 200 injections of salvarsanized serum (the Swift and Ellis procedure). There have been no ill effects, aside from one case of aseptic chemical meningitis in which there was speedy recovery. Our results are very similar to those of Dr. Taylor. Remissions occurred in three out of eight paretics. One patient relapsed after four months; the other two are apparently perfectly normal. The blood serum and cytochemical reactions were practically normal; the spinal fluid only remained mildly positive. Like Dr. Sanborn we have thus far been unable to get a negative spinal fluid in paresis.

In 75 per cent. of our tabetics the spinal fluid has become negative and all but two out of twenty-two cases have been bettered clinically. The gait has improved, the lightning pains have lessened or disappeared, the bladder symptoms have cleared up, while at the same time there has been a decided change physically for the better.

All of our cases of cerebrospinal syphilis have improved clinically, cytochemically and biologically, with one exception in which treatment seemed to have no beneficial effects.

Dr. Cotton says that his statistics show that 50 per cent. (paretics) make tremendous improvement and *that includes all cases treated, many of them in the last stages.* Of the favorable cases, and by that he means the new cases, *at least 75 per cent. have shown very marked remissions.* About sixty patients are living outside of the hospital. There have been several relapses in cases which were pretty far advanced and seemed to improve wonderfully at first. He has had no untoward symptoms, but he reports several cases of mechanical meningitis, such as I described a year ago before the American Neurological Association. The patients quickly recovered.

Of the three following cases, one is paresis in which the mental condition became normal after the fifth injection; the other two are tabetic cases in which the improvement clinically and serobiologically is notable.

CASE 1.—B. was first seen Aug. 19, 1914. Insurance agent, 34 years old, family history negative. Personal history: Uses tobacco and alcohol moderately; gonorrhea in 1904; denies syphilis. Present complaint began about June 1, 1914, with lack of mental concentration and inability to handle his business. Gradually became disoriented and confused, had delusions of grandeur, thought he was the best agent in the country, etc.; at times became greatly excited and had to be put in restraint. Physical examination negative. Neurologic examination: Pupils respond sluggishly to light and accommodation; marked increase of knee jerks; otherwise negative. The blood serum and spinal fluid gave a positive Wassermann; the latter showed increased pressure with globulin excess and 12 lymphocytes to the cubic millimeter. The colloidal gold reaction was typical of paresis. He was given eleven injections of salvarsanized serum (Swift and Ellis); his mental condition became normal after the fifth; after the eighth the Wassermann in the blood became negative. When he left us the spinal fluid still reacted positively; its pressure was normal; there were seven lymphocytes to the cubic millimeter and the Noguchi was mildly positive.

I have under my care at present a paretic who was acutely maniacal; after the second injection of salvarsanized serum the excitement disappeared and now he appears perfectly normal, his elation and grandiose ideas have also disappeared.

CASE 2.—C. was seen first June 12, 1914: 29 years old, news agent; family history negative. Personal history negative, with the exception of gonorrhea in 1914; denies syphilis. Present trouble began about one year ago with occasional attacks of shooting pains; for the past three months there has been a tottering gait with difficulty in starting the flow of urine. After a strong laxative the bowels and bladder evacuated involuntarily. For the past three months sexual power has been markedly impaired. During April, 1914, he noticed a feeling of tightness around the waist which has gradually disappeared; he also felt numbness in both feet. Physical examination negative. Neurologic examination: Pupils respond to light and accommodation, but are irregular, the right being larger than the left; marked Romberg; ataxia of both upper extremities; loss of knee and Achilles jerks; impaired muscle sense of both lower extremities; blood and urine normal; blood serum and spinal fluid gave a positive Wassermann. There was increased pressure of the spinal fluid with a positive globulin and 42 lymphocytes to the cubic millimeter. After the third intraspinal injection his blood became negative, and the spinal fluid after the seventh; cytochemically it was also normal. His gait greatly improved, as did also his bladder functioning; the lightning pains have disappeared and he has gained 16 pounds in weight. When I last saw him he was walking without a cane.

CASE 3.—A., 43 years old, married; family history negative; seen first Jan. 11, 1915. Personal history: No alcohol but tobacco in excess. Denies venereal disease, but admits exposure; one child living and well; wife has had no miscarriages. Illness began about twelve years ago with pain and soreness in joints of the feet and both heels, relieved by potassium iodid and inunctions of mercury. These conditions would recur every year or so and were relieved by this treatment. Almost two years ago he noticed that the feet were numb and were awkward and clumsy; about six months ago numbness developed in both hands and up to the elbows, also around the scrotum. Bladder and sexual functions normal. Occasional lancinating pains. Physical examination negative. Neurologic examination: Light response sluggish in both eyes, accommodation normal, left pupil larger than right; marked Romberg, no ataxia of upper extremities and deep reflexes normal. Lower extremities: knee and ankle jerks lost, superficial reflexes normal, impaired tactile sense extending from feet to knees with loss of muscle sense. Blood and urine normal. The blood serum and spinal fluid gave a positive Wassermann, with increased pressure in the spinal fluid, Noguchi positive, 18 lymphocytes per cubic millimeter. After the second injection the Wassermann in the blood became negative; after the fourth injection the Wassermann in the spinal fluid became negative in 0.7 c.c.; Noguchi mildly positive, four lymphocytes per cubic millimeter. He has received five injections of salvarsanized serum intraspinally. There has been a decided improvement in the lightning pains and in the gait; the numbness has left the upper extremities and

is very much better in the lower; there is a great improvement in the general health.

Treatment is usually regarded as contraindicated in cases of clinical tabes in which the biologic and cytochemical reactions are negative. Recently Dr. Hammes and I have each had such a case in which the intraspinal use of salvarsanized serum produced very decided improvement. The spinal fluid in my patient reacted positively after the first injection.

While in some patients there is a definite periodicity in the pains following an injection, in others their occurrence is most erratic; sometimes, but rarely, there will be no pain at all, at others they will vary in their manifestation from fifteen minutes to five hours. The cessation of tabetic pain Craig and Collins regard as the single greatest benefit following the use of salvarsan.

CONCLUSIONS

1. Every patient with constitutional syphilis, especially in the early stages, should be examined neurologically and serobiologically, and if there be found any symptoms of nervous involvement or an abnormality of the spinal fluid, intraspinal injections of salvarsanized serum should be given until a clinical and laboratory cure is effected. Bernstein advises this procedure as a prophylactic measure in all cases of syphilis, particularly in the primary and secondary stage.

2. Lange's colloidal gold solution is a valuable aid in diagnosis, possessing a marked corroborative value. Paresis gives a characteristic curve (in over 90 per cent. of our cases) so constant, say Grulee and Moody, that "one may venture a diagnosis without other findings, either clinical or laboratory." There is a distinctive tabetic curve which was present in 50 per cent. of our cases. The colloidal gold reaction differentiates clearly between paresis and cerebrospinal syphilis. In tuberculous meningitis the colloidal gold solution reacts markedly. Nonsyphilitic cases sometimes give a vague discoloration which may or may not invade the syphilitic zone, *but which has no special significance.*

3. Intraspinal medication (Swift and Ellis method) is a sane and safe form of therapy, and in the hands of competent men is practically devoid of danger. In cerebrospinal syphilis and tabes, results obtained by conservative workers are most encouraging, and in some cases little less than marvelous. When paresis can be treated in the early, the toxic, stage, before serious degeneration of nervous tissue has ensued, an arrest of the disease may reasonably be expected. Is it too much to hope for a cure?

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ABSTRACT OF DISCUSSION

DR. G. W. ROBINSON, Kansas City, Mo.: Dr. Riggs' results do not differ greatly from mine. Some have condemned this treatment after giving one injection of salvarsanized serum. This is no test. I give my patients from six to twelve injections, giving one weekly. I have used it for eighteen months and have given personally about 300 injections. I have treated about thirty paretics. Four did not improve. About half of them are now at home living normal lives. Of course I do not know how long they will remain well and do not say they are cured. I have had no accidents whatever. I use 20 to 30 c.c. of undiluted serum intraspinously. I have not used salvarsan or neosalvarsan directly in the spine. I think it is a dangerous procedure. I also believe it not safe to treat patients sitting. I formerly gave my treatments to patients sitting, but I now have them lying down while taking the treatment. I have never seen anything to equal this treatment in its results in paresis.

I have not seen any Wassermann reactions made negative after once being positive in paresis. But if the patients act all right after taking the treatment, conduct themselves and affairs with ordinary prudence, I think we have helped them whether we have made their serologic condition normal or not. Many persons, how many we do not know, are living normal lives with an abnormal serology. I have seen a case of third nerve palsy with contralateral hemiplegia disappear after three injections of salvarsanized serum. It will certainly stop the pains and visceral crises of tabes more quickly than will any other treatment.

DR. C. R. BALL, St. Paul: Five years ago I began treatment of cases of paresis with some idea of attaining an improvement in them. I took my impulse from a report of the treatment of such cases made by Donath of Budapest in which he used injections of sodium nucleinate to obtain a febrile reaction, and also a leukocytosis. Since then I have used the tuberculin method of Wagner of Vienna, the so-called intensive treatment, intravenous salvarsan injections in combination with mercury, and the salvarsanized serum intraspinally. So far as the results obtained by these different methods, there does not appear to be a great deal of difference. Remissions may occur after all of them. If my limited experience will permit me to form any conclusion as to the preference in method, I would be inclined to say that the febrile and leukocyte-producing methods along with tonic procedures have, all things considered, given the best results. Looking back over this period of five years and noting that all of the cases in which remissions occurred have again relapsed, some of the patients already dead and all of them better off if they were dead, I am beginning to ask myself if any of these methods of treatment in paresis is really worth while. At best only a temporary respite is obtained in a disease which thus far in our therapeutic endeavor has proved to be absolutely incurable. I was in the East recently and I made a particular effort to inquire at some of the large state institutions what their results were with these newer methods in the treatment of paresis. The invariable answer was, "We are not using them any more. The result obtained does not justify the effort." Nonne in a recent communication says that as yet he has been unable to see that these methods produce results in any way superior to the older methods of treatment. During the past three or four years there has been a perfect furor in the treatment of nervous syphilis, and consequently much confusion and a vast amount of contradictory evidence exists with reference to it. It seems to me that one thing is clear, however, and that is that many of the therapeutists arrive at the conclusions which they intended to prove in the beginning of their articles. In my use of the Swift and Ellis method I have followed the advice of Swift and Ellis, which was that the salvarsanized serum was not to be administered in all cases of cerebrospinal syphilis, but only in selected cases, and in those which did not respond to the other forms of treatment. In such cases I do not feel that I have obtained any further advantage, and in some cases former improvement has been lost. I do not believe that salvarsan is being used as much today as it was in the beginning of the so-called salvarsan era.

DR. FRANK R. STARKEY, Philadelphia: I am sure we all appreciate Dr. Riggs' efforts in helping to elucidate this subject, but I am convinced that as time goes on we will hear less and less of salvarsan. Last year at Atlantic City much of the program was given over to salvarsan and the discussion was voluminous; the literature was congested with salvarsan articles, and nearly all of this literature and of these discussions were favorable to salvarsan. We have heard all and more than all of the good results obtained from salvarsan, but we have by no means heard all of the bad results. In Philadelphia recently one of our prominent members read a paper in which he said that he had been administering 0.9 gm. salvarsan every four days, and that he got brilliant results, notwithstanding the well-known fact that it takes from three to four weeks to eliminate a

dose of salvarsan. What effect does it have on the kidneys and other structures while in the body and while being eliminated? Time alone will show its destructive action on the organs, including the nervous system. That we are now having more cases of early involvement of the nervous system in syphilis when salvarsan has been employed cannot be denied.

At one of our hospitals there has been a number of deaths from salvarsan which have not been reported; on the other hand I saw a patient with paresis in this institution who was having jacksonian attacks at intervals of about fifteen minutes. Salvarsan was advised but could not be obtained. The next day the man was 100 per cent. better. The day following he was still better, although no salvarsan had been used. The third day salvarsan was employed, and all of the improvement that was obtained was attributed to its use. In 1908 I pointed out the relation of the glands of internal secretion to tabes and other nervous conditions, and ten years earlier the relation of these glands and their secretions to each other and to the sympathetic and central nervous systems. I believe that the more closely we examine our tabes patients for disturbances of the glands of internal secretions, the more frequently we will find them. It is not necessary to have a frank case of myxedema acromegaly or Addison's disease, but the balance of equilibrium that normally exists between these glands can easily be demonstrated to be disturbed. The sex glands may be most conspicuously involved, or not infrequently the pituitary or thyroid may be the one showing most prominent symptoms. Pseudomyxedema or hypopituitarism or hypothyroidism may be present secondary to a hyperactivity of these organs. This follows chronic irritation or inflammation here just as it does where other organs are involved, and their activity becomes inhibited by destructive inflammatory changes.

DR. G. H. MOODY, San Antonio, Tex.: Many years ago, before we had salvarsan, I saw a good many cases of paresis and we treated them systematically and persistently with mercury. Some of them improved a great deal and were at times in apparently good condition; others did not improve. Since salvarsan has come I have tried very hard to convince myself that we have a remedy for paresis. I have not given it in a very large series of cases (only about forty) but I am sorry to say that my experience has been disappointing. I do not believe I can say for certain that we have cured a case of paresis. I have seen a great many cases improve. I have had many cases referred to me which had been diagnosed as paresis that I did not believe were paresis; those patients have improved, and some are apparently well. I would say also that in the absence of something better I am still giving our patients salvarsan and salvarsanized serum. As to the bad effects which Dr. Starkey mentioned, I cannot say that all of my cases have been free from bad effects. I have had no immediate bad effects, and for that reason I do not believe the technic has been faulty. One of my cases, within a month after the administration of salvarsanized serum, began to degenerate more rapidly than a case of paresis ought to; another in two months, and another in three or four months, degenerated more rapidly than I had ever seen cases do before. Whether the salvarsanized serum had anything to do with it, I do not know; but it points to the same opinion as expressed by Dr. Ball and Dr. Starkey that the possible degenerative effects may have to be reckoned with. We have to remember that patients improved under mercury and these cases apparently stayed better for a long time, and we can at least hope for the same thing from salvarsanized serum; but I am afraid we are going to be disappointed if we promise a cure in paresis or in tabes.

DR. W. J. G. DAWSON, Eldridge, Calif.: Nothing has been said on heredity; the cases I wish to speak about are the feebleminded. After about 800 examinations by the Wassermann test, the report showed that only 4 per cent. or 5 per cent. of our cases reacted. We have given salvarsan to most of them. We began by using the old salvarsan, but in one case there seemed to be a bad result. It did not occur immediately; it was probably a couple of weeks or more before symptoms of meningitis developed. We have been using neosalvarsan in the majority of our cases since and all I can report about it is that it sometimes changes a + + + positive to a negative. However, I can see little or no improvement in the mental condition.

DR. A. W. HOISHOLT, Napa, Calif.: The latest writers on cerebrospinal syphilis and paresis tell us it is practically impossible to differentiate clinically between the two in many cases; not even at necropsy can one be sure of the difference. That being the case, I think it may account for the variation in reports concerning the cure of paresis. I remember very well (having been about a quarter of a century connected with the treatment of paresis) the energetic treatment that was given with mercury and iodid years ago, and I once reported sixty-nine cases. In many cases I have seen retrogression in their symptoms, and it occurred to me that the fatal terminations were hastened the more energetic the treatment given. That used to be the report of the majority of writers. In regard to salvarsan, I can only corroborate Dr. Ball's experiences. I wish to mention a case which came to me recently which throws a rather peculiar light on salvarsan. The patient was a colleague who had tabes. He had been in the hands of the best men in the country and came to me for an opinion as to whether or not he should have the Swift-Ellis treatment. He had received thirty-two treatments of salvarsan, most of them (twenty-six out of the thirty-two) intravenous injections, and he still survives. I think the old German saying applies to this case:—*"Allzu viel ist ungesund."* I advised him to take a rest from all treatment for a while.

DR. GEORGE P. SANBORN, Boston: Since January, 1913, I have had under treatment by the Swift-Ellis method between 150 and 160 patients with neurosyphilis, to whom nearly 900 treatments have been given. There have been no deaths and no injurious effects so far as I am aware. Salvarsan and salvarsanized serum we have considered theoretically indicated as our best spirocheticides, applied, so far as possible, where they are needed. Treatment is directed to eradication of infection and has no regenerative action on degenerated nerve tissues. Freed or partially freed from the stress of disease, the patient may be expected to improve to the extent his physiologic mechanism is capable of. The efficiency of the method can be judged to a great extent by its effect in causing to disappear the positive Wassermann reaction, pleocytosis, globulin, and possibly the colloidal gold reaction as found in syphilitic spinal fluid. Their disappearance after treatment must be taken as evidence of initial success against the infectious process.

In our group of cases complete serologic examination has been made of all spinal fluids as obtained, so that in each case we have a series of data from beginning to end of treatment. Since pleocytosis may be taken as indicative of syphilitic irritation, its reduction following treatment favors the conclusion that the latter has to some degree controlled the irritative process. In 104 of the cases treated there was initial pleocytosis. After but one combined treatment, the average drop in cell count was 40 per cent.; seventy-six patients were treated sufficiently to reduce the cell count to normal. Of these seventy-six, one third became normal after one or two treatments; 56 per cent. after from three to five; 8 per cent. required six, and 3 per cent. more than six treatments. The greatest number of treatments necessary to reduce cell count to normal was ten, in one case.

Globulin in excess is also a sign of syphilitic irritation. In about 20 per cent. of the cases it became negative and in nearly all the remaining, less strongly positive. The Wassermann reaction, always more difficult to reduce than the others, became negative in fifteen of forty-nine tabetics having initial positive reaction. Nearly all the others have shown consistent tendency to become more weakly positive. In no case of paresis has it been possible to secure a negative Wassermann reaction in the spinal fluid.

The colloidal gold reaction, another evidence of abnormal protein, has been carried out as routine and frequently has tended to become less intense as treatment has progressed.

Clinical improvement sooner or later is to be observed in a large percentage of cases. Perhaps the best clinical evidence of efficiency of the Swift-Ellis method is the almost invariable subsidence of root pains in tabes, even in cases in which they have been most severe. Clinical expectancy must be tempered by the fact that the treatment can have no direct regenerative action on degenerated tissues.

DR. H. G. BRAINERD, Los Angeles: I simply want to ask Dr. Riggs if he finds any difficulty in keeping the spinal fluid free from Wassermann reaction, cell count and globulin after he has once secured such a thing. We found that it could be accomplished and hoped that our patients were cured, but were disappointed to find that the clinical symptoms recurred and the spinal fluid Wassermann became more positive, with a larger cell count than ever before, and increased globulin content.

DR. CECIL E. REYNOLDS, Los Angeles: I wish to mention two cases in further illustration of Dr. Ball's observations:

One was a child about 3 years old who had congenital syphilis—a case of Dr. Ross Moore's. There was no definite paralysis, although the reflexes were altered on one side, but the child was not getting along well and Dr. Moore asked me to give it salvarsan in his absence, which I did—a very small dose. There followed a marked brachial and facial palsy, with deviation of the head to the right, coming on in about two weeks. I turned back an osteoplastic flap and found an arachnoid cyst over the midfrontal and midprecentral areas.

Another case was that of a very athletic young man of 35 who had contracted syphilis eighteen months before. He had started a course of intravenous salvarsan in the East and had been continuing in Los Angeles, having had his last dose about six weeks previously. Coming to Los Angeles for another injection, he registered at a hotel in a perfectly sober condition. I was first called to see him in the small hours of the morning. He was quite unconscious and undergoing endless contortions on the floor, having smashed up all the furniture, in a state of acute delirium. I had him taken to a hospital and in spite of all kinds of medication he had fits for thirty-six hours. He regained consciousness once after bleeding, but soon passed into status epilepticus and died after about forty hours. Dr. Stanley Black examined the cortex and could find no cell degeneration, but only acute congestion. I have never before seen such severe epilepsy commencing in such a recent case of syphilis and probably salvarsan had some effect in causing it. In regard to the intraspinal injection of salvarsanized serum, I have been favorably impressed on the whole.

DR. FRANCIS X. DERCUM, Philadelphia: I am convinced that the day has not yet arrived to form definite conclusions as to the value of salvarsan in paresis. It is true that in a number of cases remissions ensue after salvarsan treatment, both intravenous and intraspinous. However, we should bear in mind that remissions equally pronounced and equal in duration have followed the older methods of treatment or simple physiologic procedures, or have often occurred spontaneously. In many instances, too, salvarsan fails to produce any results whatever and there is some reason for thinking that in some instances the intensive treatment shortens the duration of life. We are in grave danger of being carried away by our enthusiasm. During the last thirty or forty years the profession has passed through a number of therapeutic epidemics. I need only recall in this connection the Bergeon treatment in tuberculosis and the hanging treatment in locomotor ataxia, not to speak of the various psychotherapeutic measures which have from time to time been the vogue.

DR. PHILIP HILLKOWITZ, Denver: I cannot speak from the neurologic, but only from the laboratory standpoint, and can only confirm what has been said in the paper and discussion, that as regards paresis we have never succeeded in making the Wassermanns negative. For that matter, in old cases of syphilis of twelve to fifteen years' standing without any cerebrospinal symptoms, it has been impossible to get the Wassermann negative in the serum by specific treatment. As regards tabes, there has been occasionally a return to the negative, but only in a small number of cases. From the theoretical point of view I can only repeat what the chairman has said about the therapeutic efficiency of salvarsanized serum—that by injecting 6 to 9 gm. of salvarsan and removing a small amount of blood within an hour, the amount of arsenic must necessarily be infinitesimal and we cannot therefore explain *a priori* the supposed beneficial results. If then the clinicians are not so very enthusiastic on this treatment, it stands to reason that we must view the therapeutic effect of this drug with more skepticism than we have done heretofore.

DR. W. A. JONES, Minneapolis: I saw in the National Hospital in London, last year, three tabetics lying side by side. They were the ordinary laborers of the streets, and were more or less robust, more or less alcoholic, and all syphilized. One was treated with salvarsan, one with mercury, the third was given no treatment, and he made much more prompt recovery than did those who were medicated. I wonder if we have not gone to too great extremes and if we had better not get back to more rational lines of observation and treatment. I have had some fatalities in my serum work, and a number of failures and frequent relapses, and on the whole the work is rather unsatisfactory. One fatality was in a most promising case; following his intraspinous injection of salvarsanized serum, he had the most violent attack of purpura hemorrhagica I ever saw and lived only four days after its inception. I think the selection of cases should be very carefully made and the treatment should be very carefully carried out.

DR. WALTER V. BREM, Los Angeles: When Swift and Ellis announced their intraspinous treatment I welcomed it with enthusiasm and used it in about 100 cases; but my enthusiasm soon waned. I have had a number of patients who improved at first. The tests in the spinal fluid reduced considerably with the first and second treatments and then remained there and I could make no further impression on them. I used the whole serum in some cases of this kind and drew the blood fifteen to twenty minutes after the injection of a full sized dose. Swift himself has recently reported that the result of this treatment was probably not due entirely to the salvarsan in the serum; that he had treated two patients with serum alone from syphilitic patients who had not been given salvarsan and had obtained good results both clinically and serologically from the use of this serum.

I was much interested in the mercurialized serum reported by Byrnes, and have given over twenty intraspinal injections of mercurialized serum. I have obtained results in two patients that I could not get with the salvarsan, but in the others I failed. This, however, may be due to the fact that I was unable to use the quantity of mercury Byrnes used on account of the intense reactions, and that nearly all the patients have been paretics. I began by giving one mg. and got a most intense meningeal reaction. This patient had 33 per cent. reduction in the Wassermann test of the cerebrospinal fluid after one treatment. The next week I gave him a half milligram of mercury and he had no headache or fever, and had another reduction which made a total reduction of 50 per cent. in his Wassermann test. The next time I gave him another half milligram and found that there had been no further reduction in the spinal fluid. The next time I gave him ¾ milligram and the spinal fluid showed a considerable increase in the Wassermann test. I am unable to give that patient more than ½ to ¾ milligram on account of the intense reaction. The other cases have responded variously, but nearly all have had rather intense reactions.

I believe that the logical treatment of syphilis of the nervous system is by the subdural route, if we can get a drug that will kill the spirochetes without injuring the patient too much. The treatment of epidemic meningitis and of tetanus by the intraspinal use of serums seems to be evidence of that. I think this is the line of work which will eventually become the ideal method of treating these diseases.

Dr. George A. Moleen, Denver: From the diversity of opinion expressed here (which is simply an echo of that which has gone over the medical world) I think one can hardly assume any other position than that of doubt. Beginning with the original statement of Ehrlich, with reference to salvarsan, which certainly led us to jump with enthusiasm; and when Swift and Ellis announced that by the incubation of serum from a previously salvarsanized patient we could by inoculation destroy the spirochete, we also jumped, and the application of it in these cases seemed at that time to be a most wonderful advance.

I was much impressed a few weeks ago when I saw a patient who had been secured against the recurrence of syphilis as a result of a single injection of salvarsan four or five years before in Massachusetts; he showed unmistakable evidences of paresis. On the same day a man of 74 years was referred complaining of headaches and other evidences of arteriosclerosis, and I learned during the taking of the history that he had had syphilis at 19. He had taken mercurial treatment after the secondary flora and had no recurrence whatever, nor had he had further treatment. The comparison of these two cases is to me very significant; and the question arises whether, if we had, or were to have, a syphilitic infection, would we rather have been treated fifty years ago, than now?

The relation of arsenic and the nervous system has been one which heretofore has been looked on with suspicion, because we looked for parenchymatous degeneration following the use of large quantities of arsenic, or even small quantities over a long period of time. This leads up to the question as to whether or not these nervous degenerations are the result of the specific virus on tissues and whether the resistance of those tissues is not lowered, and whether it is not even more vulnerable to destruction than it was before. It is a question time alone can decide. It would be interesting, as suggested, to use inactivated, nonsalvarsanized serum, such as has been used in epilepsy and in certain forms of skin eruptions, and see if parallel cases taken as control would not show amelioration.

Nucleinate of soda injected in the vein gave good results in paresis and good results in tabes. It may be that the use of inactivated serum might produce parallel results to those we have obtained with salvarsanized serum. I believe we are all more or less in doubt; it requires time, careful observation, and, most of all, conservative judgment.

Dr. C. Eugene Riggs, St. Paul: I am heartily in accord with Dr. Jelliffe that the Swift and Ellis treatment is a step in the right direction, though I am far from feeling that it is the final step. I believe that this form of treatment at present is the most efficient. I was far from making any claim for the cure of paresis; what I did say was that it *increased the tendency to remission*. Before I came here I had under my care a stalwart man in the maniacal stage, so acute that it required ten men to put him in restraint. Three injections of salvarsanized serum had a most marvelous effect. I had a conversation with him before I left home and his talk was perfectly rational.

Dr. Brainerd has asked as to the ultimate effect of this treatment on the serobiologic reactions of the spinal fluid. I am unable to answer this because I have not yet had opportunity to accumulate the necessary data. May I, however, quote a sentence from a letter received recently by Dr. Hammes from Dr. Swift: "The benefit in most of the tabetics seems to have been permanent. In some in whom the Wassermann reaction was not negative in the cerebrospinal fluid, there has been a relapse. But of course we do not consider these patients as cured."

Form of Exercise.—Barring heavy athletics, youth may be given a free choice of practically all games and forms of amusement. A warning should be sounded for the man past middle age who might attempt to adopt some of the strenuous games more suited to youth, but in general such risks are infinitely less than the opposite mistake—that of taking no exercise.—*Public Health Reports*, May 7, 1915.

DIFFICULTIES IN THE DIAGNOSIS OF SINUS THROMBOSIS *

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The difficulties encountered in the diagnosis of sinus thrombosis of otitic origin have always been recognized as many and severe on account of the large number of diseases simulated and the few symptoms which are common to all cases of the affection. The closer we study our necropsy material and the published cases which have puzzled the diagnostician, the more uncertain we become concerning what our position in the matter should be at the bedside.

The classical cases should not leave much uncertainty in our minds and should impel us to an early radical treatment, but there have been so many doubtful cases published of late, that we are more apt to err on the side of too great radicalism in this day, than on the side of conservatism.

The signs and symptoms of thrombosis (called in future signs) may be divided into:

1. Local signs; those due to the mechanical presence of a thrombus in the vein.

The edema back of the mastoid is produced by an inflammatory trouble in the periosteum covering the mastoid and becomes of value as a help in the diagnosis of sinus thrombosis only when it is localized over the emissary vein region; this tenderness over the emissary again can only be used as suggestive in case other signs are present, for it is oftener present in simple mastoiditis. Signs of this character may truly become of great value in cases that have shown little or no mastoiditis, for it is in cases showing sclerosed mastoids that we are particularly prone to see thrombosis. The swelling and tenderness over the jugular have been so marked, in cases, that the jugular could be rolled under the finger as a stout strand, and tenderness was confined entirely to the vein. At other times, in case of marked septic involvement of the vein, there is simply a diffuse tenderness and swelling located in the whole neck such as is recognized in a Bezolds abscess. Oppenheimer[1] has described a unilateral lymphoid pharyngitis or tonsillitis associated with a unilateral adenitis at the angle of the jaw, which I have never noticed, but which is quite reasonable, though one could imagine it might be associated with any deep inflammatory process in connection with the ear.

The stasis in the veins of the head has been recognized for some years. It is so fleeting and is so dependent in case of examination of the disk veins on the personal equation of the examiner that one should be very careful about allowing the sign to weigh in the diagnosis in doubtful cases.

Of very great importance is the physical appearance of the bone over the sinus and of the sinus itself, at operation. Only by uncovering a sinus can one be sure of its exact condition; still if the bone is not pathologic in appearance and the blue vein can be seen through the thin layer of bone, one can be safe in a diagnosis of noninvolvement in the presence of no symptoms referable to the vein.

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Oppenheimer: Ann. Otol., Rhinol. and Laryngol., 1911, p. 109.

In many cases with operation, we find a comparatively free mastoid only to expose an extradural abscess after following a small dark colored sinus or granulation area over the sinus. These hidden abscesses are prone to produce changes in the sinus wall, covering it with granulations, which, if disturbed, open the way to an infection of the vein content. The firm nonresistant vein may or may not be filled with a thrombus, and it is well in cases that have shown few general symptoms to wait before exploring the vein even with a needle.

2. Signs referable to the entrance into the blood stream of toxins or bacteria or both, from the diseased vein and its content.

The chilly sensations, chills and rapid rise and remission of temperature are too well known in the septic cases to need much comment. Let me remark here that one is astonished at times at the complacency with which these startling symptoms occurring in ear cases are looked on by many practitioners.

One chill alone is not enough to confirm a diagnosis, suspicious as it may be. Bondy[2] reports a case in which, ten days after a radical operation, the patient had a severe chill and high fever. The next day the temperature was normal and remained so. One should always wait for a second chill before operating or have enough other evidence to make a pretty positive diagnosis.

A very valuable sign is the presence of a sudden change in the general condition and appearance of the patient. He stands with difficulty, feels suddenly exceptionally nauseated, is thin, haggard and aged looking, with a sallow, dry appearance of the skin, which is so characteristic of all cases of septicemia. This transformation from a cheerful, possibly feverish-looking patient to the quiet dejected object may take place inside a half hour; even without the presence of chills, a high fever should put the attendant on guard.

The blood in the septic cases shows both an increased leukocyte, and increased polymorphonuclear count and with the presence of several rising counts may help, although any collection of pus may produce the same picture.

3. Signs referable to the lodgment in remote areas of particles from the thrombus.

These consist of joint pains and swellings and edemas over remote areas with heart irregularities due to an endocarditis. They are not frequent, but when present are of the utmost value in the diagnosis.

4. Signs referable to the extension of the inflammatory process to the meninges.

The severity of these signs seems to have no relationship to the extent of involvement of the meninges. Intense vomiting, headache, slow pulse and Kernig have been reported by Hoffman[3] in a case of simple serous involvement all of which disappeared on emptying the vein, and we all have seen cases of extensive meningitis with but few, if any, symptoms referable thereto.

The headache, dizziness and choked disk are the most frequent of these signs and have been more insisted on as diagnostic features on account of their comparatively early appearance. The slow pulse, vomiting, Kernig, mental excitability and paralyses are more the signs of a purulent meningitis, and occur as a rule so late that the case has become hopeless. This is not always the case, as in children we are very apt to get an early stiffness of the neck or a Kernig early in a serous meningitis or meningeal irritation from pressure. This I have seen several times in simple cases of acute otitis media. An explanation of the choked disk accompanying some cases showing the above symptoms is very hard to obtain, because it does not always occur even in cases of thrombus involving the lateral sinus, the petrosals and the cavernous. Bartels[4] in his analysis of five cases comes to the conclusion that it must be due to the intracranial complication accompanying the thrombus and not to stasis in the vein itself.

Through the study of the pathologic anatomy it will be readily seen that the course taken, or picture presented, by each case will depend on two factors, one the less important, the resisting powers of the patient; the other the local condition, that is the organism producing the trouble with its accessibility to the general blood stream and the general physical condition of the thrombus itself. A noninfected thrombus or one whose ends are sterile is not going to produce the same picture that one will which is throwing a virulent organism into the stream or casting off small particles to produce secondary thrombi. In order to explain, therefore, our clinical picture, we must analyze the various local pathologic conditions found, and naturally the most important is the bacteriologic element. The question immediately arises, Is the thrombus due to bacteria in the vein or to some toxic influence of the bacteria on the vein and its contents? I do not believe we are in a position to answer this question at present as we have not enough data at hand. The experiments so far made are not conclusive enough to allow us to draw a conclusion one way or the other.

Cases have been reported which showed a noninfected thrombus, but there is a chance of error here, for more careful observers have pointed out that one portion of the thrombus examined was infected and another, from which the culture was taken, was sterile. I believe that in most cases there is a direct bacterial invasion producing the thrombus, but that in isolated instances there may be a toxemia producing injury to the vein without an entrance of the bacteria, or again that the primary focus within the vein may show bacteria and that the growing ends may be sterile, or that portions of the thrombus may be secondarily infected.

There is no doubt but that the presence of bacteria in the peripheral circulation is of great diagnostic help in judging the case, but too much weight should not be placed on the blood cultures if negative. The work done along this line, although somewhat confusing at present, is leading to valuable data in all directions.

Duel and Wright[5] made positive blood cultures from the blood in uncomplicated cases of otitis media and mastoid suppurations. Their methods were repeated in eleven cases by Libman and Cellar[6] with negative results. These men came to the following conclusions after an exhaustive study of the subject:

1. With few exceptions uncomplicated mastoid infections give negative blood cultures.

2. With few exceptions sinus involvements give positive cultures at some time or other.

2. Bondy: Internat. Centralbl. f. Ohrenh., 1913, pp. 29, 149.
3. Hoffman, R.: Ztschr. f. Ohrenh., 1897, xxx, 17.
4. Bartels: Ztschr. f. Augenh., 1909, xxi, 23.
5. Duel and Wright: Tr. Am. Otol. Soc., Jan. 1, 1909.
6. Libman and Cellar: Am. Jour. Med. Sc., cxxxviii, 409.

3. Cases of mastoid disease that have been properly operated in which a bacteremia exists with clinical symptoms that cannot be accounted for, are cases of sinus thrombosis.

4. Streptococci remain in the blood in cases of sinus thrombosis either because there is still trouble present in the veins or because endocarditis has been established, which latter possibility is very infrequent.

5. An increasing number of colonies indicates a grave prognosis.

6. An absence of bacteria in doubtful cases would make one hesitate to explore for a thrombus until the possibility of all intercurrent disease had been excluded.

7. A negative blood culture with persisting symptoms excludes an endocarditis.

Sondern[7] claims that he has found a positive blood culture in six cases with the mastoid alone involved without the sinus. Kobrak[8] examined twenty cases of acute otitis media in the first few days of fever and found the blood free of bacteria; later he examined only the more severe cases and found a positive blood culture only in those cases that were pyemic. He observed that if the number of colonies was on the increase the prognosis was poor. Oppenheimer[1] studied one hundred cases of mastoiditis, obtaining negative blood cultures in all uncomplicated cases and in fifty cases of involvement of the lateral sinus there were forty-two positive cultures. Gruening[9] reports seven positive cultures out of ten thrombosis cases examined.

Our cases, though small in number, are significant in that out of five cases examined by Dr. Dickson all showed negative blood cultures, and among the cases was one of marked pyemia and one of sinus thrombosis, in which there were metastatic involvements of the joints. The work of Leutert, Schubert, Neurnberg, Kasslauer, as well as those quoted above, as Oppenheimer says, can not be easily refuted, and when work appears that is at variance with theirs it is in all probability due to errors in technic. The great drawback in all the culture work is the delay involved. These cases must be handled promptly to get results and the clinical signs will remain our most valuable asset.

In addition to the delay involved, in our bacteriologic work we have learned to recognize an additional drawback to even an assumption of a diagnosis by the frequency of occurrence of that type of case due to a bacterium of low virulency or to the presence of a so-called noninfected thrombosis. These cases were formerly thought to be very infrequent, but that is an error as is evidenced by the later literature on the subject.

I have found nine cases reported which progressed with a symptom-free course throughout; seven cases more are reported exhibiting no rise in temperature; other cases are reported in which the patients had had chills but at the time of operation were fever free, and still other cases are on record in which organized thrombi were discovered in the sigmoid sinus at necropsy some time after the mastoid disease had become quiescent.

To this array of cases, I wish to report the following case of infected sinus thrombosis progressing without symptoms referable to the sinus and in fact so quietly as to cause practically no alarm to patient or operator:

F. M., a Portuguese barber, aged 38, entered the clinic May 27, 1914, complaining of lack of appetite, excessive night sweats and dry cough, having lost 13 pounds' weight in three weeks. Urinalysis showed a large quantity of albumin, hyaline, granular, cellular and pus casts, many cells and leukocytes, bile stained. No tubercle bacilli were found in the sputum. Blood, white blood cells, 6,600; polymorphonuclears 55; lymphocytes 25; large mononuclears 10; eosinophils 2; basophils 2. No ear trouble was noted. The patient appeared only the once at the clinic at this time, but returned Oct. 15, 1914, six months later, when he said his former troubles had all cleared up; but he was now complaining of a painful swelling over the ear. He stated that four weeks previously he had had a three-day discharge twenty-four hours after an acute pain. The pain had persisted but the discharge had ceased permanently. One week after the pain there was a swelling behind the ear which had increased steadily; there were no chills and no fever.

On examination I found a fluctuating swelling over the mastoid region extending to the eyes and to the middle of the head above and behind. The posterior superior canal wall was bulging. The hearing was fairly good. The urine contained a slight cloud of albumin and a few hyaline casts. Blood, red cells, 3,900,000; hemoglobin, 93 per cent.; white blood cells, 17,400; polymorphonuclears, 61; lymphocytes, 29; large mononuclears, 4; eosinophils, 1; transitionals, 1. Wassermann, negative; temperature, normal.

At operation the mastoid was found full of granulation tissue, the sinus in close proximity to a small antrum. The sinus had been uncovered by the pathologic process. There was a total thrombosis of the sinus with a breaking down of one portion so that a large cavity was present in the sinus. There was a fistula in the skull leading into this cavity and the scalp was lifted from the skull by a large quantity of pus. The fistula through the skull was at least a half-inch posterior to the mastoid cells. A smear showed a gram-positive diplostreptococcus. Succeeding the operation the patient made an uneventful recovery save for a scalp abscess which was later opened.

After the operation it was thought by Dr. Barkan and myself that pressure on the jugular on the opposite side produced an appreciable filling of the veins of the disk, but other observers were not able to confirm our observations. This case therefore ran, with this possible exception, a symptom-free course. Chills or chilly sensations were absolutely denied by the patient, who claimed also that he had had no fever (confirmed by thermometer at time of examination). The patient had suffered no inconvenience and would not have appeared at the clinic had it not been for the swelling behind the ear and the edema of the eyelids, as his pain was minimal.

Originally the thrombus must have been formed by the chemical action of the pathologic process in the mastoid and not by a passage of the diplostreptococcus into the vein. This thrombus having been formed became infected later at the point of original contact and the wall of the vein gave way as well as the content of the vein only after a strong barrier had been formed for the blood stream.

It is interesting to note that in this case, in spite of a total occlusion of the vein and in spite of the fact that the septic process had reached well over the meninges beyond the vein, there were no symptoms whatsoever from the side of the meninges, no choked disk, no headache, no stiffness of the neck, no paralysis of the sixth nerve, no disturbance of mentality. Probably the fistula through the skull had something to do with this.

7. Sondern: Ann. Otol., Rhinol. and Laryngol., xx, 621.
8. Kobrak: Allg. med. Centr.-Ztg., 1907, lxxvi, 299; Verhandl. d. deutsch. Otlont. Gesellsch., 1907, xv, 93.
9. Gruening: New York Med. Jour., June 23, 1909.

Were it not for Passow's case[10] we would be inclined to attribute all intracranial symptoms appearing in sinus thrombosis cases to the toxic influence of the bacteria, on account of the freedom from these symptoms in all fever-free cases save his. In his case severe meningeal symptoms appeared on the formation of a fever-free thrombosis, to disappear promptly on its evacuation.

The diagnosis of the presence of a thrombosis in a case of suppurative otitis is often difficult enough, but it becomes doubly so when we consider the possibility of the simultaneous presence of other affections. The literature is full of mistakes and undoubtedly many have been made that never have seen the light of day in print. Malaria, endocarditis, tuberculosis, hysteria, puerperal processes, typhoid, pneumonia, adenitis, erysipelas, syphilis and, in children with measles or scarlet fever, a nephritis or adenoid infection, have each in turn been taken for a sinus thrombosis.

Probably the most frequent mistake in diagnosis is that of malaria, on account of the similarity of the temperature curve. Urbantschitsch[11] has collected six cases in the literature with simultaneous occurrence of otitis media and malaria; in each case the symptoms were taken for those of sinus thrombosis.

Urbantschitsch's case was that of a 14-year-old girl with acute mastoiditis operated February 29, at a time when the fever was 37 to 38 C. (98.6 to 100.4 F.), exhibiting no signs of any complication. A sinus thrombosis was discovered at operation and removed. The patient recovered perfectly, leaving the clinic on April 2 and returning June 1, complaining of ringing in the ear, lessened hearing and a reopened perforation with a small amount of pus in the canal. The appetite was poor and the patient weak. On June 16 the temperature was 39 C. On the 18th, 20th and 22d there were chills; plasmodia were discovered on the 23d. In this case there was no splenic enlargement.

I wish to report a case of malaria which did not end so fortunately, occurring in the Stanford University clinic:

G., aged 50, an American tanner, was seen Aug. 17, 1914. The patient lived in Los Angeles until ten months ago when he began work on the Sacramento River. Eight years ago he had typhoid; erysipelas two years ago; he had had no acute rheumatism; no malaria. About two years ago, he had an attack of chills and fever associated with pain in the lumbar region, lasting about one week. He has been deaf in the left ear since the attack of typhoid. The patient came to the clinic on August 17, complaining of tinnitus, pain over the ear and of a previous discharge from the left ear. He said that two months previous he had suddenly had a feeling as though an insect had entered the canal; there had been pain but no nausea, vomiting or vertigo; after ten days there was a watery discharge which later became thick and purulent. On examination the temperature was found to be 99.8 F. There was some tenderness over the mastoid. The drum was thick, swollen, dull red and gave the impression one finds in a *Streptococcus mucosus* infection after three weeks. A paracentesis gave a mucoid secretion after politzerization. The patient complained of a heavy, dull, full feeling in the head, not an ache, and a clinical diagnosis of a capsulated bacterial invasion of the middle ear with meningeal irritation was made and the patient sent to the hospital for operation.

At operation the mastoid was found to be made up of many cells containing a thick red mucous membrane and much blood-tinged mucus. The sinus was uncovered and was found to be clean and well filled. The secretion contained few pus cells, few red blood cells, no bacteria as shown in the slides. In the culture tubes a few isolated small colonies of streptococci were found which were considered to be a contamination. August 21: Blood count: white cells, 6,600; polymorphonuclears, 69; lymphocytes, 21; large mononuclears, 6; eosinophils, 2.5; basophils, 5; transitionals, 5; 200 counted. No plasmodia were found. On the 18th, 20th and 22d there were rises of temperature to 103 F. and on the 22d a chill. On the 22d a search of one hour was made in specimens taken one hour after a paroxysm and no plasmodia were found. On the 21st, Dr. Dickson found some tenderness along the descending colon. The liver and spleen were not palpable. On the 20th, the cerebrospinal fluid was normal in cell count bacteriologically and chemically. On the 24th, diazo reaction was negative. On the 24th, the right eye ground was normal. The left showed a diffuse edema of the disk, edges blurred and indistinct, veins swollen. Diagnosis by Dr. Barkan was of fresh neuritis opticus. There was some nystagmus to the right.

It was decided on account of the chill, the eye findings, and the negative findings for typhoid and malaria, to open the sinus. The dura of the middle and posterior fossae were uncovered and both found clean. The sinus was opened and found normal. Following the operation the mentality of the patient became clouded and the knee jerks were lessened. No stiffness of the head and no Kernig was noted. On the 26th the Widal test was negative. On the 28th the blood was found to be filled with *Plasmodia malariae* (the ring forms of the estivo-autumnal type). The cerebrospinal fluid showed no bacteria but contained many red blood corpuscles mostly containing ring forms of plasmodia. The patient died on the 28th. The necropsy showed a somewhat enlarged spleen 125 by 95 by 5 mm., an otitis media acuta, malarial septicemia. Smears from the cerebellum and cerebrum showed the majority of the red blood cells in the capillaries containing fully developed small parasites with much pigment; few roseates, few small soquet rings, sometimes occurring in the same corpuscle with the large forms. Several large phagocytes full of black pigment were noted. The marrow and spleen contained many pigmented cells, a moderate number of fully developed malarial parasites in the reds. The adrenals contained mostly young forms. The middle ear showed many polynuclear leukocytes, many small diplococci and short chains.

The occurrence of an acute discharge from the ear due to the presence of the plasmodia is unknown, according to a personal communication from Capt. Craig, U. S. Army. The fact that no bacteria were found in the secretion from the wound at the time of the operation is extremely interesting and would lead one to suspect that the plasmodium could produce such discharges were it not that a few streptococci were found in the middle ear at necropsy. Still these may have been introduced subsequent to the operation. That the plasmodia were not observed in the peripheral circulation after careful search does not mean that they were overlooked, as others have observed the phenomenon of late appearance in cases with the estivo-autumnal varieties. Dr. Gellineck of San Francisco has observed such a case, in which repeated careful search was made with negative result and suddenly the peripheral circulation became literally filled with the organism.

Not any less interesting or important in our differential diagnosis is the fever-producing abdominal syphilis, which progresses with a picture that is typical of malaria or sepsis. This interesting disease has been studied by Mannaberg,[12] Gehrhardt[13] and others, and occurs far more frequently than was formerly sus-

10. Passow-Wagner: Charité-Ann., xxxiii.
11. Urbantschitsch, E.: Monatschr. f. Ohrenh., 1909, p. 29.
12. Mannaberg: Ztschr. f. klin. Med., 1907, lxii, 253.
13. Gehrhardt: Berl. klin. Wchnschr., 1909, p. 1046.

pected. The fever may be preceded by a marked chill and rise of temperature to 104 each day, persisting for months, as Mannaberg reports in one of his cases of hereditary syphilis. The presence of this affection, together with mastoiditis or chronic suppurative otitis, is not to be belittled, for in this day of the radical operation many cases of syphilis of the ear come to operation. Downing[14] describes a case in which he had operated for an acute mastoiditis, in which seventeen days later the patient developed a temperature of 102 daily, preceded by a chill. Quinin was used in spite of a negative examination for malaria, without result. The leukocyte count was 6,000 and the patient did not appear septic. Salvarsan was administered on the 15th day of the chills with an immediate cessation of all symptoms.

209 Post Street.

ABSTRACT OF DISCUSSION

DR. CULLEN F. WELTY, San Francisco: In one part of his paper Dr. Graham speaks of meningitis simulating sinus thrombosis. He cannot, neither can I, or any one else operate in such a case in the hope of finding a sinus thrombosis. The cases that are found by accident are entirely different. They do not have symptoms. I have had two such cases; one, a neglected acute mastoid, with no symptoms whatever of sinus thrombosis. The sinus, accidentally uncovered by a chisel, revealed a discolored spot the size of the little finger nail. It was incised and the clot removed. There was no elevation of temperature before or after operation. The jugular was not ligated. In the second case of neglected acute mastoid of three months' duration there was no temperature or chill. In curetting out the mastoid I encountered a second abscess cavity that proved on careful observation to come from the sinus. A few years ago Neumann of Vienna reported eight cases; mine not included. Since then quite a few cases have been reported.

Dr. Graham reports a case of malaria mixed up with a discharging ear. Such conditions are indeed difficult of correct diagnosis. If it is a case of sinus thrombosis, so much valuable time is lost in bacteriologic work that the patient grows profoundly more septic, chances of recovery are much lessened and many things may happen. This case recalls a case reported by Dr. Hastings of Los Angeles at the meeting in Portland. In this case the bacteriologist made a positive finding of malaria. Further examination several days afterward gave a negative finding for malaria. Then the patient was operated on and died in a short time. I relate this case as it has a bearing on what I have to say in connection with malaria and sinus thrombosis. I feel it much safer for the patient to make an incision of the sinus so one can speak in definite terms as to what one has to accomplish. There is a near possibility of having malaria and sinus thrombosis in the same individual. This must always be borne in mind.

This naturally leads one to the bacteriology of sinus thrombosis. What I am about to say is from conclusions drawn from literature and from my own cases. With a given number of cases on the one side without bacteriology, and the same number on the other side with bacteriology, and the diagnosis dependent on the bacteriologic findings, more patients will die from delay in conjuring on the bacteriologic work than by the other procedure. If there are classical symptoms, operate early and do not delay. This delay is what causes the infections that kill. Suppose you do an unnecessary operation and open a healthy sinus; so long as you are clean about your work, nothing will happen, or will only rarely happen. I opened one sinus accidentally in a labyrinth operation. It was more or less bother to me through the entire operation, but nothing happened at all. The consensus of opinion in ear literature is such that I do not consider it a serious accident to happen. A few years ago the blood culture promised much for us in this condition, but it has not stood the test of time.

DR. GEORGE F. COTT, Buffalo: I was amused by what Dr. Welty has just said. I never heard of an operator taking out a thrombus accidentally. We do not take out the thrombus because it is there, but because it is septic. I can recall five cases at present in which the temperature began to rise at the end of a week after a radical operation, and went up to 104 or 105, then down to subnormal. That kept on for a week. There was a thrombus which was removed at the first operation. That man is still living, and I am going to watch until he dies and after the postmortem prove that I am right. It does no harm, so what is the use of taking it out? You can do the same thing with a thrombus in any other part of the body. I have one in my leg that has been there six or seven years. It may be necessary some day to take it out but now it does no harm.

DR. D. H. TROWBRIDGE, Fresno, Calif.: I have operated in six or seven of these cases of sinus thrombosis. One case in particular I recall on hearing this paper. This patient came in with a history that he had had one or two attacks of vomiting without especial reason for it. This was not after he came under my observation, but while he was in the hands of his general physician. On arriving his temperature and pulse were practically normal, with a slight discharge from the right ear. He had no history of any suppurative ear trouble before; had a history of being struck with a stone or something like that, but nothing serious. This man I kept under observation for a week or ten days, and finally, temperature and pulse remaining practically normal all the time, having excluded everything else, I did a mastoid operation. I think there were probably five or ten drops of pus found in the antrum. After this his pulse remained practically normal, no chills, no rigors, none of the symptoms one would expect in sinus thrombosis. I had, however, a general feeling that the man had a sinus infection. During that time one of the eye and ear men of San Francisco happened to be in consultation with me in another case and I had him go over the man carefully. His opinion was that the man had absolutely no trouble in the sinus. After that, in probably a week or ten days, the man had a metastatic abscess at one of the joints, I think the knee, and this, of course, made the diagnosis clear. When I opened the sinus it was absolutely full of pus. The sinus and jugular were thoroughly removed. The man had no typical symptoms whatever. If I had examined him alone I might have thought that I had overlooked something. He did not have a blood culture, but the blood count was not exceedingly high, and yet he had a vein that had been full of pus for two or three weeks. This patient lived about three months following the operation and then died from what I thought was meningitis. The mastoid and sinus wound had healed.

DR. NORVAL H. PIERCE, Chicago: I would like to support Dr. Cott in his position in regard to aseptic thrombosis in the vein. I have seen quite a number of aseptic thrombi in the lateral sinus, and I have let them very discreetly alone, with no bad effects. I do not believe that opening a sinus in a septic field in mastoid disease is without danger. In fact, I am convinced that it has distinct danger. We are liable if we plunge into every sinus that we see—if that is our routine—to kill quite a number of patients by infecting a healthy sinus. Based on rather a large experience I am exceedingly conservative about operating in lateral sinus disease. I have almost formulated a rule with myself that I shall not operate before the fourth day after the initial symptoms. I have seen two cases of malaria, for instance, and quite a number of cases of erysipelas that could not be differentiated from septic thrombosis. I operated two weeks ago on a patient who had been operated in the East for an acute mastoid with a fistulous discharge back of the ear and considerable true pus coming from the external auditory canal. A few days after arrival in Chicago the father telephoned me that the child had had slight fever; the fever had gone to 100; whereas for two weeks before she had

14. Downing: Ann. Otol., Rhinol. and Laryngol., 1912, p. 1044.

been without fever. I sent her to the hospital and next day there was consultation of a good many eminent otologists, and they all decided to operate, except one man who said he thought the patient should be treated by conservative methods. I insisted on operation. The patient had had a frontal headache since and before the operation and during the course of this after treatment there had been exacerbations of temperature, pulse, etc. I took the responsibility of this case and operated, cleaned up everything very thoroughly, and everything went all right for twenty-four hours, when the patient had a chill, the temperature went to 105 and continued for thirty-six hours between 105 and 103, then descended, followed by another chill and elevation of temperature, and quite profuse perspiration. The blood count was something like thirteen or fourteen to eighteen thousand. I took the blood count three or four times a day, the polymorphonuclears being something like 69 per cent. I was very much worried, as you can imagine, having insisted on the operation, and I went so far as to cancel my reservation to attend this meeting, when to my great joy on dressing the case one morning a little red spot appeared anterior to the ear; it was a case of erysipelas. You cannot differentiate these cases and the only thing to do is to wait. I do not believe that valuable time is lost in obscure cases. I believe it is a distinct advantage to wait, and in 100 cases they will come out better than if you immediately jump in and open every case of sinus that has symptoms of sepsis.

DR. HARRY L. POLLOCK, Chicago: Dr. Graham did not touch on a very important thing regarding the diagnosis in double otitis media. I remember one case in a child with double otitis media, both about the same time and with the same discharge, in which there was an unquestionable sinus infection. There was a question of which side was causing the trouble. An otologist diagnosed thrombosis, and said he would have to open up one side and possibly the other; but the people objected and the case came to us in the hospital. On examination, we noticed on the left side less discharge than on the right, so we told the people that the sinus thrombosis was on the left side. We operated and found it on that side and the patient made an uneventful recovery. This was some years ago, before the West-Beck symptom had been brought to our attention. This consists of compressing the opposite jugular and getting a dilation of the veins of the forehead and fundus oculi. In four cases I found it was positive and operation proved the contention. I tried it in quite a number of cases of mastoid in which I suspected thrombosis. Some cases were negative and it was positive at other times, but I did not operate without the other classical symptoms. In the four the test was absolutely positive.

DR. H. B. GRAHAM, San Francisco: I have not touched on the treatment of these sinus thrombosis cases; the paper is limited entirely to the diagnosis. The treatment is very important, but ought to be written up in another paper. Treatment is entirely dependent on the diagnosis. I am sorry that anybody would ever give the impression that opening a vein in a septic field is of little importance. It is a very serious proposition and I should like it to go on record here that opening a vein in a septic field is taking your patient's life in your hands. It is a dangerous proposition. It is far better not to open that vein and take the chances of a future operation than to open that vein and not have a chance for a future operation. Patients have died from the accidental opening of a vein while doing a mastoid operation.

The question of double otitis is an interesting subject and one that has caused a great deal of trouble. There is a case on record of Oppenheim in which he operated on one side; there had been an examination made of the other ear and the drum was found intact but slightly reddened. His attention was called to the fact that there was trouble on that side. He opened up the right side, expecting to do a sinus exenteration, but found the sinus free and sent the patient to bed. The patient died. At necropsy a sinus thrombosis was found on the other side, which could have been attended to if the left side had been opened.

CASEIN-MILK FEEDING IN INFANCY AND CHILDHOOD*

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The foremost aim of modern pediatrics is to spread the knowledge that there is no better food for infants than mother's milk, and as a result the rather neglected research of the digestive disorders of nursing infants is beginning to occupy a larger space in the medical literature. The better acquainted the profession is with these disorders, the smaller will be the number of children who are weaned unnecessarily and exposed prematurely to the dangers of artificial feeding. But the unavoidable fact that there always will be a very large number of infants for whom only artificial food is available has stimulated the endeavor to find the standard food which, like breast-milk, will require quantitative rather than qualitative alterations. The encouraging results obtained with such modifications as advised by Friedenthal and by Schloss[1] give reasonable hope that the near future will bring us a milk organically and inorganically so closely approximating mother's milk that it might be called a fair substitute. But it already has been pointed out that, aside from hypothetic biologic differences, chemical limitations alone will never permit the creation of an absolute substitute. Furthermore, it would be necessary to imitate colostrum also, the great importance of which, for the first days of life, is recognized.[2]

The therapeutic value of these adaptations to human milk is not yet sufficiently investigated, and for the present the interest of the profession is centered on recent methods of curing certain nutritional disorders without attempting to simulate breast-milk in their preparations. Of course no modification, not even human milk, will be successful unless used correctly and with proper confidence, conditions which make a knowledge of the infantile organism in health and disease an essential requirement. A physician with such equipment will be able to overcome a great number of nutritional disorders with comparatively simple methods, especially if utilizing the knowledge that a single constituent of the milk is not harmful in itself, but only if fed in incorrect relation to the others, both the organic and inorganic ones. Such individualization requires exceptional skill, and those recent modifications already contain the different constituents in a correlation which makes the milk of great therapeutic value in most of the nutritional disturbances of a fermentative origin.

The first and most important representative of this class is the albumin-milk advised by Finkelstein and Meyer,[3] the therapeutic success of which is based on its antifermentative action. This effect is obtained through the reduction simultaneously of whey and lactose and through an increase of casein and calcium. The value of albumin-milk is praised by every one who has had an opportunity to use the correct preparation, and all agree that they obtained results where formerly breast-milk alone could have saved the child. The greatest handicaps for the use of this valuable modi-

* Read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Schloss: Säuglingsernährung, 1912, S. Karger.
2. Langstein: Lehmann's Jahres Kurse, 1912, 1913.
3. Finkelstein and Meyer: Jahrb. f. Kinderh., lxxi.

fication are the taste and the difficult preparation (the powdered product is unreliable), facts which led to recommendations of simpler substitutes.[4] Engel[5] succeeded, through skilful handling of rennet, to obtain a finely divided coagulum of casein and fat from which is poured off part of the whey. He avoids by his method the difficult breaking up of the cheese and the addition of buttermilk, which cannot be obtained everywhere in perfect form. The disadvantage of his modification, with which he obtained excellent therapeutic success, lies in the not fully eliminated, uncertain action of rennet and the great care necessary in warming the milk to feeding temperature. Stoeltzner[6] and Feer,[7] in their modifications, dispense with the use of rennet entirely. They reduce whey and lactose by diluting their milks, and add prepared casein and calcium to obtain the antifermentative action and the much desired formation of fat-soap stools in diarrheic conditions.

Stoeltzner adds 20 gm. of a casein-calcium preparation, larosan, to a formula consisting of 500 c.c. of milk and 500 c.c. of water, and adds to the latter, after a few days, from 1 to 5 per cent. of dextrimaltose, according to the case. His milk conforms pretty closely to albumin-milk with the exception of the lower percentage of fat.

Feer uses sodium caseinate, and increases the calcium by giving up to 3 gm. of calcium lactate daily if necessary. He emphasizes especially the high fat content of his mixture, obtained through the addition of 20 per cent. cream. His formula[8] consists of: 500 c.c. of whole milk, 50 c.c. of cream, from 10 to 50 gm. of dextrimaltose, 15 gm. of sodium caseinate, and 600 c.c. of water. This means that he added to his milk 10 per cent. of cream, from 1 to 10 per cent. of dextrimaltose, 3 per cent. of sodium caseinate and about as much water as milk and cream together. The calorific value of 1,000 c.c. of this milk amounts to 600 calories. The treatment will have to begin with varying quantities, according to the case, as advised by Finkelstein for his albumin-milk but the increase in carbohydrates can be postponed a little longer, because both modifications, Stoeltzner's and Feer's, contain more sugar from the beginning. In favorable cases the full amount of food should be reached inside of one week or ten days, that is, according to Feer, 100 c.c. of milk per 2 pounds of body weight. The difficult task is the determination of the time for increasing the carbohydrates. Stoeltzner reports for his larosan-milk the same good results as with albumin-milk, and is supported herein by a number of writers. Feer states that in some of the severest cases his casein-cream-milk has proved inferior to albumin-milk, which seems to be of higher therapeutic value on account of the freshly coagulated casein. Both authors recommend their modifications as permanent food for healthy infants.

My own observations conformed pretty closely to the experience of these authors, but after a short trial I found that with my material I could improve results by making not only the carbohydrates but also the fat a variable constituent. Recently Miller[9] and Hoobler[10] have published similar views. Hoobler reports a satisfactory substitute for albumin-milk in using 16 ounces of fat-free buttermilk, 16 ounces of water and 10 gm. of powdered casein. His mixture contains 2.8 per cent. protein, 0.25 per cent. fat and 2 per cent. carbohydrates, to which cream can be added, if advisable. The drawback to this formula lies in the difficulty of obtaining the proper buttermilk. The powdered casein he recommends has been used in my County Hospital practice for economical reasons, and was found just as valuable as Feer's and Stoeltzner's preparations. Its strong odor is restricting its usefulness considerably in private practice, in which I now am employing the sodium caseinate almost exclusively. It is equal in value to larosan and much cheaper.[11]

We have known for years that casein fed in daily quantities from 15 to 20 gm. is harmless for the youngest nursing infants, and recent investigations by Holt and Levene[12] and by Bosworth and Bowditch[13] have proved the same for bottle babies even in much larger quantities. Thomas and Hornemann demonstrated that high casein feedings increase the resistance of suckling pigs against tuberculosis, and Langstein reports clinical observations which show that such feedings increase the immunity of infants against infections in general. My own experience with high protein feedings, which I have used empirically for years, has never demonstrated the development of lowered resistance in my patients, and I was very glad to learn through Feer and Stoeltzner of methods employing increased quantities of casein systematically.

The following modification, made from 4 per cent. milk and used almost exclusively for the cases reported, does not represent more than an adaptation of their teachings to my material:

17 ounces of skimmed milk (skimmed by dipper after two hours).
1½ ounces of cream (the first from the top).
17 ounces of water.
3 level teaspoonfuls sodium caseinate.

The mixture is boiled, if used therapeutically, and pasteurized if for rather prolonged feeding periods. It represents a skimmed milk to which 10 per cent. of

COMPOSITION OF CASEIN MILK AND OTHER MILKS

	Proteins	Fat	Lactose	Ash	Chlorin	P_2O_5	CaO	K_2O	Na_2O
Albumin-milk	30	25	15	4.9	0.4	1.28	0.93	0.87	0.69
Stoeltzner's milk	35	17.5	23	...	....	1.22	1.36	....	....
Feer's milk	26	23	20	4.4	0.25	1.35	1.05	0.87	0.59
Casein-milk	30	11.5	23	4.6	0.5	1.4	0.6	0.8	0.8

4. The limitation of this paper forbids the discussion of all the different substitutes recommended.
5. Engel: Deutsch. med. Wchnschr., 1913.
6. Stoeltzner: München. med. Wchnschr., 1913.
7. Feer, E.: Jahrb. f. Kinderh., July, 1913.
8. Both modifications have to be boiled.

9. Miller: Arch. Pediat., 1914.
10. Hoobler: Arch. Pediat., 1914.
11. It seems that practically any powdered casein will be serviceable, provided it is not too old and is clean. No preparation of this kind should ever be dispensed in a glass bottle.
12. Holt, L. E., and Levene, P. A.: The Influence of High Protein Feeding on the General Metabolism, on the Intestinal Flora and on the Body Temperature of Infants, Am. Jour. Dis. Child., November, 1912, p. 265.
13. Bosworth, A. W., and Bowditch, H. I.: Casein in Infant Feeding, Am. Jour. Dis. Child., August, 1914, p. 120.

cream and 2 per cent. of casein have been added.[14] The calorific value, after addition of 5 per cent. dextrimaltose, amounts to about 440 calories per thousand c.c., and the tabulated comparison shows that it contains only half as much fat as albumin-milk, two thirds of its calcium and 0.8 per cent. more of lactose.

In case the relation between calcium and fat should be unsatisfactory in an individual case, additions of calcium lactate will prove of assistance; as much as 5 gm. per day have been given.[15] The additional sugar used was dextrimaltose (from 1 to 7 per cent.) in private practice and granulated table sugar in the County Hospital, the latter without apparent bad results. In practically all the cases barley or oatmeal water (1.5 per cent.) was used in place of water.

Following Feer's advice, the attempt was made, and usually with success, to reach the full amount inside of ten days, that is, 100 c.c. of skimmed milk with 10 c.c. of cream and 2 per cent. of sodium caseinate per about 2 pounds of body weight.[16] In the majority of cases, the increase of fat to 2 and 2.5 per cent. of the total mixture was started at first after that time, but some children required a higher percentage of fat sooner.[17] In severe cases an addition of sugar was not started before the third or fourth day. According to the case, a water period from six to twenty-four hours accompanied by an enema and castor oil preceded the administration of the milk.

In successful cases the diarrheic stools became formed inside of a few days, frequently even after twenty-four hours. The alkaline movements resembled buttermilk stools. The appearance of very hard stools was an indication for an increase in fat and sugar.

It was characteristic in favorable cases that the formerly very restless children became quiet and appeared happy even at a time when the food supply was quite insufficient. The initial loss in weight was comparatively small in the majority of children. Among the great number of children, kept on this food for considerable time, only one case of infantile scurvy developed. The child was raised on this modification until 8 months old, when it began to refuse anything but the milk for several weeks, and was easily cured by forced feedings of vegetables and fruit juices.

During the last year no child was kept on the preparation much longer than the symptoms required, because it was found that in a number of cases the weight increased more rapidly on the ordinary modifications, for which the tolerance had increased considerably during treatment. A few days after the mixture had been fed in a quantity adequate to the child's weight, the casein was dropped abruptly.

This report is based on the observations of 163 children of which reliable data could be obtained. The investigations were started twenty-two months ago. Nineteen of the children were younger than 1 month, seventy-three were from 1 to 6 months old. Only thirty of these children were treated in hospitals. According to clinical classification there were:

1. Children with normal stools, twelve. The majority of these children had to be weaned abruptly. There were two failures; both children became more or less colicky and did not gain satisfactorily.

2. Premature children, two. Both babies were two months premature. One was started on the fourth day of life and did well in spite of a severe ophthalmoblennorrhea. The other baby received at first mixed feeding for about two weeks.

3. Mixed feeding, eighteen, with good results, especially marked in infants formerly suffering from dyspepsia on breast-milk alone. In most of these babies, ordinary cow's milk modifications had caused dyspeptic symptoms.

4. Atrophic babies, twelve children, very much under weight and producing more or less dyspeptic stools. One failure, no death.

5. Infants suffering from acute and subacute intestinal indigestion, seventy-two. Under this heading are included difficult feeding cases and the milder and severest forms of the acute stages. There were five failures, no death.

6. Alimentary intoxication, one. The child could not be saved.

7. Dysentery, three, with one death. The child came under treatment on the seventh day of the disease. In the other two patients there was no outspoken superiority of the food to be noticed.

8. Eczema, twelve. In all cases the movements improved rapidly, but in two of them no influence on the skin condition was noticeable.

9. Carbohydrate dyspepsia in older children, twenty. Here the food proved exceedingly valuable to take the place of plain milk, which could not be digested.

10. Parenteric infection, four.

11. Typhoid fever, one.

12. Postoperative feeding, two. In all these cases, meteorism was favorably influenced.

13. Tetany with rachitis, four. In all these children the preparation had been started on the third or fourth day without recurrence of symptoms.

CONCLUSIONS

1. Casein-milk feedings have been found to be successful as temporary food in allaitement-mixte and whenever it was necessary to wean a very young child abruptly. Although they do not seem to produce any harm during prolonged use, the advantages they offer are not sufficiently clear to recommend their substitution for the ordinary milk modifications in normal children.

2. They cannot replace breast-milk in some of the severest cases, but in the great majority of nutritional disturbances, as seen in private practice, they will be found to be of assistance. They are indicated in disorders of a fermentative origin, and can be fed here in rapidly increasing doses regardless of the stool picture, provided the child does not develop symptoms of alimentary intoxication. Through their use may be avoided the prolonged or repeated therapeutic hunger periods with their deteriorating influence on the child's organism, which are so frequently the cause of turning an originally mild into a serious disorder.[18]

Cobb Building.

14. With the milk at my disposal an addition of 2 per cent. casein proved sufficient. One teaspoonful of sodium caseinate equals 3.5 gm.

15. Aschenheim gives from 7 to 10 gm. without causing any harm.

16. Feer found that 100 c.c. of whole milk, etc., per 2 pounds of weight will cover the child's need. In using skimmed milk this quantity will be insufficient in most cases until more cream is added.

17. Milk (4 per cent.) allowed to stand two hours after delivery: upper 1½ ounces of cream = 16 per cent. fat; 2½ ounces = 12 per cent.; 3 ounces = 15.8 per cent. fat.

18. In addition to the references already given, the following may be consulted:

Leopold, J. S.: Experiences with Whey Modified Milk in Infant Feeding, Am. Jour. Dis. Child., September, 1914, p. 196.
Wegener: München. med. Wchnschr., 1914.
Forcart: München. med. Wchnschr., 1913.
Ostrowski: Arch. f. Kinderh., 1914.
Rost: Arch. Pediat., 1914.
Stolte: Jahrb. f. Kinderh., lxxiv.
Aschenheim: Monatschr. f. Kinderh., 1913, xii.
Leichtentritt: Arch. f. Kinderh., 1914.

THE HISTOGENESIS OF THE REPRODUCTIVE PROCESSES IN MAMMALS *

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One of the most interesting questions presenting itself to the investigator, and which has been surrounded with the deepest mystery, is that of the vital processes of the reproduction of animal life. From the earliest periods of medicine may be traced the results of observation and the deductions therefrom which have given rise to speculative theories and beliefs.

Fabricius[1] made careful studies of the placenta. He demonstrated that the placenta varied in position, shape, and size in mammals, laying emphasis on the form of a placenta found in the human animal. He concluded that the single placenta found in the human female, the mouse, the rabbit, the guinea-pig, the dog and the cat, is associated with the presence of incisor teeth in both jaws and with distinct toes. When the placenta is found multiple, as in the sheep, the cow, and goat the incisors are present in one jaw only, and the hoofs are cloven.

Malpighi[2] was among the first to make careful scientific studies of the changes which take place in the uterus and the developing ovum. The microscope had become an instrument of value. Histologic changes were traced by him with a skill worthy of the great master which he was. His name is deservedly prominent on the roll of the famous teachers and investigators of his period. He is entitled to the appellation of "The Founder of Microscopic Anatomy." His study of the secretory glands and their structures led to the inference that the secretion is formed in terminal acini, standing in open connection with the ducts.

William Hunter of London[3] studied the early development of the placenta of woman with extreme care and his beautifully illustrated folio volume will ever remain a classic of English medical literature.

William Hunter's work on the reproductiveness of woman must remain of permanent value. In Plate 32, Figure 36, he gives a careful drawing of the decidua vera of the fifth week of pregnancy.

> It plainly appears that the decidua in this case was a thick membrane of gelatinous texture, which had lived and adhered to the whole triangular cavity of the fundus uteri; that the tubes terminated on its internal surface; that the chorion was lodged in its duplicature, or was surrounded with its substance; and that in the proportion as the chorion would have been extended in the progress of gestation, it would have encroached on the cavity of the decidua, stretching its interior lamella or decidua reflexa, till at length, the cavity being obliterated, that interior lamella would have come into contact with the inside of the decidua.

He describes an abortion at the ninth week when the embryo hangs by a slender navel string from the inside of the placenta. The amnion, the chorion, and the decidua reflexa are adherent to one another. Here the larger and more crowded branches of the shaggy vessels which shoot from the external surface of one part of the chorion mix with the decidua, or uterine part, to form the placenta.

Here is seen a portion of a chorion which afterwards becomes the uniform transparent membrane. It is covered with fewer and more delicate floating vessels, which lose themselves in the decidua reflexa. The embryo is seen through it.

Montgomery of Dublin published a most interesting book on human gestation, emphasizing a discovery of his own, made and published four or five years previous, of a peculiarity in the structure of the decidua vera.

> If the ovum is expelled entire, we have the uterine decidua covering the substance under examination and distinguished by its soft, rich, pulpy appearance and strong red color; its external or uterine surface being rough and unequal and when well freed from the coagulated blood and immersed in water, exhibiting numerous small round foramina, capable of admitting the head of a pin; while its internal surface is smooth, generally thrown into slight, soft folds, and exhibits little or no appearance of foramina; any that may be perceptible being of very minute size. These characters, which are always to be recognized without difficulty, are sufficiently distinctive of the structure under consideration; but there is another, not hitherto noticed by anyone as far as I am aware, although it is probably one of the most remarkable features in the organization of this peculiar product. Repeated examinations have shown me that there are, on the external surface of the decidua vera, a great number of small cup-like elevations, having the appearance of little bags, the bottoms of which are attached to, or embedded in, its substance; they then expand or belly out a little, and again grow smaller towards their outer or uterine end which in by far the greater number of them, is an open mouth when separated from the uterus; how it may be while they are adherent I cannot at the present say. Some of them which I have found more deeply embedded in the decidua vera are completely closed sacs. Their form is circular, or very nearly so; they vary in diameter from a twelfth to a sixth of an inch, and project about a twelfth of an inch from the surface of the decidua. Altogether they give one the idea of miniature representations of the suckers of the cuttle-fish. They are not confined to any part of the surface of the decidua, but I think I have generally found them most numerous and distinct on those parts of it which were not connected with the capillary rudiments of a placenta, and at the period of gestation which precedes the formation of the latter as a distinct organ. They are best seen about the second or third month and they are not to be found at the advance periods of gestation. I confess that I am not prepared (nor indeed is this the place) to offer any very decided opinion as to the precise nature or use of these decidual cotyledons, for to that name their form, as well as their situation, appears strictly to entitle them; but from having on more than one occasion observed within their cavity a milky or chylous fluid, I am disposed to consider them reservoirs for nutriment fluids separated from the maternal blood, to be thence absorbed for the support and development of the ovum. This view seems strengthened when we consider that at the early periods of gestation the ovum derives all its support by imbibition through the connection existing between the decidua and the villous processes covering the outer surface of the chorion.[4]

Prof. Charles S. Minot, in his "Theory of the Placenta," says:

> According to the views explained in the preceding pages, I hold the placenta to be an organ of the chorion; that primitively the chorion had its own circulation, and formed the discoidal placenta by developing villi, which grew down into the degenerating uterine mucosa. By the degeneration of the maternal tissues, the maternal blood is brought close

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Fabricius: De Formato Foetu, 1624, Folio.
2. Malpighi, Marcello: Born in 1628, died in 1694; he was Professor of the University of Bologna about twenty-five years. He was appointed physician to Pope Innocent XII, and for some years lived in Rome.
3. Hunter, William: Anatomia Uteri Humani Gravidi.
4. Montgomery, W. F.: Signs and Symptoms of Pregnancy, London, 1837.

to the villi, and the degeneration may go so far that all the tissue of the uterus between the villi and the muscularis uteri go to form the so-called decidua; the placenta receives its fetal blood by the means of large vessels running in the mesoderm of the allantois. From this discoidal chorionic placenta, the zonary placenta of carnivora, the diffuse placenta of the lower primates, and the metadiscoidal placenta of woman, have been evolved.

Dr. Minot was a man of erudition and enthusiastically devoted to science. By his recent death Harvard University has lost one of her famous pupils and distinguished teachers. His postgraduate education was in Germany, and to the last he adopted as correct the conclusions of the German school. All this I accepted as fundamentally correct until I became acquainted with the researches of Ercolani, professor in the great University of Bologna. I found by accident in a second-hand book store in Paris a very cheaply printed unpretentious volume published in Algiers, Africa, a translation in French by Dr. Andreni, of a certain portion of the investigations which had been conducted by Professor Ercolani. As a prize essay it had received an award from the Academy of Science at Paris.

Ercolani was a count, and cousin of the present king of Italy; like my old master, Professor Virchow of Berlin, he was equally celebrated as a leader in the great political struggles for the elevation of his people, and as an enthusiastic devotee of science educated in the schools of the great Antonio Alessandrini, whose diligence the pupil early imitated. Under the most lamentable poverty of means, he contributed to the foundation of those monuments of marvelous industry, the Bologna museums of comparative anatomy and veterinary pathologic anatomy.

The high renown which Ercolani had acquired in the sciences, together with his profound learning, procured for him many honors. He attained the highest offices of Bologna's most famous university, in which he was several times president of the medical faculty and twice rector of the university. Aided by government, he was enabled to erect new buildings and furnish the school of veterinary medicine with modern appliances for successfully carrying on original investigations in the department of comparative anatomy and physiology. Although widely known by his many original contributions to science, he is deserving of, and he receives, world-wide repute for his long-continued investigations of the placental development in vertebrates.

In our Harvard library, I found in the Bologna Transactions of the Academy of Sciences the original papers, with illustrations, published from time to time, having been presented by him as contributions to the academy. Convinced of the singular value, as well as the originality of his work, I collated and presented to the English reading public my first edition, which included all his anatomic researches up to the date of the publication. The closing chapters were written especially for this American edition. In 1884 I published a second and enlarged edition, which included also Professor Ercolani's researches on the pathologic conditions of placental development, with a careful analytic review of the whole subject, written while yet suffering from the dire malady which speedily thereafter terminated his life.

In the preface to the second edition of my translation of Ercolani's work I say:

I have myself confirmed many of the observations of the learned author and I have therefore repeated assurance of the correctness of his statements and deductions. As if, with the foreknowledge of his untimely end, immediately before his death, Prof. Ercolani reviewed his entire work in extenso with a long résumé of his carefully established conclusions. This summary is also included in the present volumes. I am convinced of the correctness of Prof. Ercolani's teaching. I hold in admiration the remarkable ability and certainty by which he arrived at conclusions so far-reaching and demonstrated with singular clearness nature's uniform law of the unity of anatomic type in a simple and fundamental plan of embryonic nutrition and development.

The present occasion offers an opportunity to review very briefly some of the more important deductions to be made therefrom. The studies of reproduction by the medical profession have been chiefly limited to the human species. Nothing is more complex or confusing, more a veritable labyrinthine riddle,[5] than the fully developed human placenta.[6]

There are many and varying factors which must be taken into careful consideration in the study of the miracle of reproduction. Many of these must necessarily be eliminated from this article. First and most important is the matured ovum, which is usually impregnated in the fallopian tube. The cellular segmentation which goes on in the first days; the implantation of the ovum and its subsequent development, is a chapter foreign to the histogenesis of uterine life in the present discussion, except so far as pertains to the nutrition and growth of the fetus. Even here, we must limit ourselves for the most part to the early histologic changes which occur in the fetal structures.

The two important series of structures presenting themselves for investigation in the anatomy of the placenta are the fetal villi, of the chorion and the maternal villi. These component parts form the placenta. The complexity of its structure in any given mammal is dependent on the degree to which, in the course of its development and growth, the maternal and the fetal portions have become interblended.

In the study of the reproductive processes of woman, these changes early become so complex that, except in the first weeks of pregnancy, very few definite conclusions can be drawn. The study of the changes taking place in the lower animals has been of the highest value. To William Turner of Edinburgh,[7] and G. V. Ercolani of Bologna, Italy, two of the most distinguished scientists of comparative anatomy, we are chiefly indebted for the elucidation of this problem. Turner arrived at the conclusion that the utricular glands are secreting structures, that they enlarge during pregnancy, and that their secretion is poured out between the mucous membrane and the chorion.

The demonstration seems complete that the main factor in the nutrition of the entire mammalian family, reduced to its simplest terms, is—a villus of secretion, maternal, and a villus of absorption, fetal. The maternal villi have their origin in the utricular glands, which are active during the entire reproductive period of the female.

These glands take on a singular activity at the so-called period of heat in the lower animals and about

5. The deductions of the earlier writers were clothed in fable quite as much as the Golden Fleece.

6. Ercolani, Giovanni Battista: The Reproductive Process — Its Histology, Physiology and Pathology, Demonstrating the Unity of the Anatomical Type of the Placenta in all the Mammalia and the Physiological Unity of the Nutrition of the Foetus in all the Vertebrates. Translated by Henry O. Marcy, A.M., M.D., Boston, Houghton, Mifflin & Co., Riverside Press, 1884.

7. Turner, William: Lectures on the Comparative Anatomy of the Placenta, Edinburgh, 1876.

the period of menstruation in woman. In woman, these glands greatly enlarge and a proliferated portion breaks down in the processes of menstruation, quite to their base.

This disintegration goes on during the entire period of uterine activity. It may be playfully designated as "cleaning house" for the tenant which may never take possession, regardless of the sign "to let."

In extra-uterine fetation in woman, remarkable changes take place in the uterus proper, especially in its inner coats. Here the glands, instead of undergoing the destructive processes of menstruation, take on a change not very unlike the first processes of impregnation. In some instances a veritable decidua is formed and the thickened velvety structure of the mucous membrane, with a greatly increased vascularity, is seldom wanting.

These maternal changes are instructive in their bearing on the development of the decidua vera in woman. In the first stages of uterine development, the chorion, which is the most external of the fetal membranes, is uniformly covered with delicate, slender villi of a soft, velvety appearance.

It is common knowledge that in woman the chorial villi in the early stage of development pertain almost uniformly to its entire surface and are at first interblended with the entire decidua vera. Later on, absorption takes place and these nearly disappear, leaving a translucent membrane except at, or near, the placental site. Then most complex changes take place, the chorial and the maternal villi interblending in the most confusing manner.

In the mare is found one of the simpler forms of placental development. The chorial villi persist during the entire period of gestation, for the most part uniformly developed, and here we find the intradigitation of the chorial and the placental villi comparatively easy for study, giving us perhaps the best demonstration of the simple plan of fetal nutrition — a villus of secretion in close approximation to, and blended with, a villus of absorption.

It is of extreme scientific interest to trace the multiple variations in the entire group of the mammalia. To this subject, however, we can only allude. In the ruminants, the villi are collected in large tufts called cotyledons, scattered over the surface of the chorion in very considerable numbers. In the cow, in one instance, I think I observed about eighty of them scattered uniformly over the entire chorion. These villi soon assume a complex form, budding from the side and end, and frequently assume an arborescent shape. The primal villus is the stem and the offshoots form the branches; these last are highly vascular.

The epithelial lining of the mucous membrane of the uterus is columnar in form in nearly all mammals. The utricular glands may be described as branching tubes which vary in length and direction in different mammals. My old friend Dr. G. J. Englemann of St. Louis[8] determined that no glands exist in the human uterus at birth. At the tenth year he found the glands assuming a tubular shape, becoming numerous and extending through the thickness of the mucosa into the muscular coat. Only at puberty do they become well developed and of active function.

Harvey[9] maintained that the fluid secreted by the cotyledons was absorbed by the fetal villi. Needham, of London,[10] yet more clearly insisted on the fact that the cotyledons were in function only secreting, while Haller[11] expressed the thought in a single sentence so terse that we quote: "In ruminantibus manifestam fit, matrem inter et foetum, non sanguinis sed lactis esse commerciam."

Analysis of this fluid by N. Gamgee[12] shows that it is alkaline, and contains besides water, albumin, fat and inorganic salts. A long known and well-established fact is that rudimentary cotyledons are never wanting in the nonpregnant state, but it remained for Ercolani to demonstrate that on the site was developed a new organ of glandular character and that it differed from the diffuse placenta chiefly in being developed over circumscribed areas and possessing a more complex character.

The single placenta, whether zonarial or discoidal, offers difficulties far greater to its satisfactory study because of its complexity of formation.

The bibliography of the subject forms a chapter in the literature of anatomy and physiology of exceptional interest to the special student, although most confusing to the seeker after knowledge. An admirable sketch of the observations made in this field of inquiry is found in the work of Ercolani above referred to.

We select for careful examination the gravid uterus of the rabbit. A transverse section of the placental site in the earlier period of pregnancy, about the end of the second week, shows three parts, each clearly distinct.

(1) The muscular wall of the uterus.

(2) The placental neoplasm which is developed on the inner uterine surface.

(3) Above this the old uterine mucous membranes tumefied and about to undergo destructive changes.

Two most noteworthy conditions appear. The uteroplacental vessels have a lumen almost double the vessels from which they proceed, and, notwithstanding their greater volume, they show in their walls none of the anatomic characteristics which serve to distinguish the arteries from the veins, and which are clearly visible in the uterine vessels. The second and even more important fact is that these vessels, instead of the ordinary walls, are surrounded with a uniform envelope of cells of a special character, which cannot be distinguished from the cells of the decidua serotina and the maternal placental tissue. The special characteristics of the walls of the vessels, composed, as they are seen to be, of only the endothelium, is an objection to the supposition that their development could proceed from the vascular net-work of the old transformed mucous membrane. This is emphasized by the exceptional fact that the old uterine mucous membrane is detached from the muscular wall, and, with its glands, is undergoing a process of rapid destruction. These facts place it beyond all doubt that the uteroplacental vessels and their surrounding cells are the result of a real neoformative process. In all animals having a single placenta the decidua vera and the decidua reflexa are of new and distinct formative character. The decidua vera is composed of newly formed cells, which are early arrested in their development, and superimposed on it is the old uterine mucous membrane, usually easily distinguished by its glands, and which, later, is seen in process of destruction and

8. Englemann, G. J.: Am. Jour. Obst., May, 1875, p. 32.
9. Harvey: Opera Omnia, Leyden, 1737.
10. Needham: Padua, 1656.
11. Haller, London, 1767.
12. Gamgee, N.: Vet. Rev., No. 46, Edinburgh, 1864.

interblending between the external layer of the ovum and the internal uterine wall.

In most animals the newly formed placental vessels have a uniform diameter and constitute a network of small meshes, which reaches as far as, and is firmly joined to, the chorion. In the meshes of this network are found the fetal vessels which unite and enter the cord. By injection of these we have a better demonstration of the relations established between the fetal and maternal portion of the placenta. A careful study affords convincing proof that the umbilical arteries ramify and end in a thin, fine network of capillaries in the chorial villi, and are in close contact with the cellular covering which clothes the maternal vessels. Demonstrative evidence of this relationship in the human placenta has been frequently observed by myself when the placenta has been undisturbed in its connections with the uterus for a considerable period after the death of the fetus. The chorial villi become shrunken and easily separate from the decidual sheath, the cells of which remain unchanged.

In certain of the lower animals (for example, the *Cavia cobaya* or guinea-pig) Ercolani has observed that the maternal vessels become dilated in their terminal loops. This is of the greatest importance, since it furnishes an example in rudimentary condition of that which takes place in an extreme degree in the human placenta.

The destructive changes in the uterine mucous membrane of woman after conception are limited to the epithelial layer. After the separation of the decidua vera from the internal uterine surface, it is observed that the muscular wall is covered by a mucous membrane identical with that lining the uterine cavity before impregnation. The uterine mucous membrane is little more than a simple layer of epithelium, and the reproduction of this is all that is required to restore the internal surface of the uterus to its primary state.

During the early period of development of the human placenta the decidual cells form a richly vascular compact layer surrounding the chorial villi. For a limited time the relationship between the parts is not so intimate that they cannot be separated. At this stage, before the maternal vessels become ectasic, the form of development is not unlike the diffused or disseminated placenta.

Charles Robin states that in proportion as the villi of the chorion subdivide and increase in volume the superficial capillaries of the maternal placenta are largely dilated and form delicate vascular folds, which are interposed between them. The dilatations of the interposed maternal capillaries increase in direct ratio to the development of the chorial villi.

The walls of the proliferating branches of the villi are necessarily forced against the decidual layer of cells covering the ectasic thin-walled maternal vessel. Thus this is introflected, and a close union ensues. In this manner the so-called placental lacunae are formed in the fully developed placenta, and from this very deceptive appearance it has been held as a demonstrated fact that the fetal villi swim in the maternal blood.

Dr. John Reid was among the first to enunciate the belief that the fetal villi, in projecting, push before them the membranes forming the limiting wall of the placental sinuses, each of them in this way receiving an investment. Schroder van der Kolk and Goodsir taught that the processes of the decidua were prolonged over each villus, and thus separated it from the maternal sinus.

Braxton Hicks states that the placental sinuses, as usually represented, do not exist. He thinks the changes in the fetal blood are effected by endosmosis, but suggests that the follicles of the decidua may secrete a fluid which is poured into the intervillous spaces for absorption by the villi.

The epithelial covering of the vascular loop of the fetal villus is wanting because of the intimate relation which has been established between it and the secretory villus, which never loses its own epithelium. The form of the vascular loop of the maternal villus varies very greatly. In the quadrumana and in woman the dilatations become lacunose and are actually enormous.

All the vertebrates during the period of embryonic life, in order to complete the marvellous phases of their development, require a special nourishment, which is always furnished them by the mother. This is conveyed to and converted into its own substance by the embryo, and however many and considerable may be the differences met in these two fundamental factors, the unity running through them readily appears under two general forms, represented by the yolk of the egg in the oviparous animals and by the placenta in vertebrate mammals. In the first the maternal element is stored up in a mass by the mother, and emitted with the ovum in the quantity needed by the embryo to complete its development. In the second this nutritive material is furnished by the mother from the placenta, which elaborates it as needful for the developing embryo. These materials, in every case, are absorbed and conveyed to the fetus by means of its own vascular appendages. Thus nutrition is carried on during the development period in all vertebrates by a single law of physiologic modality. The typical anatomic form in the two fundamental parts of the placenta, however wide the variation, is always identical. It consists of a villus of new formation, maternal as well as fetal, each composed of an internal vascular loop surrounded by a cellular layer and covered by an outer epithelium. The office only of the villi is different—the fetal absorptive, the maternal secretive. These villi always come in contact more or less intimate, but the walls of the vascular loops never in any instance touch. This is the more to be emphasized since it invalidates the idea hitherto held, and yet almost universally taught, that the mode of the nutrition of the fetus is an interchange between the two bloods by endosmosis and exosmosis. The different ways of the interblending of the fetal and maternal villi give the complex and confusing picture of placental formation.

The belief that the lacunae were really large cavities as they certainly appeared, and not the maternal vessels greatly dilated, was held as a truth proved and indisputable; and it was through this belief that two other deceptive appearances were received as actual truths; namely, that the villi floated in the maternal blood, and that the epithelium covering them appertained to the fetus instead of to the mother.

This is another demonstration of science, showing that the great fundamental plan and law, in the last analysis, is based on pure and simple truth.

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OBJECTIVE PSYCHOLOGY OR PSYCHOBIOLOGY WITH SUBORDINATION OF THE MEDICALLY USELESS CONTRAST OF MENTAL AND PHYSICAL*

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A few years ago the American Psychological Association discussed the question of a course in psychology for medical students. Since then the problem has been taken up in the Johns Hopkins Medical Department, last year in a course which I gave with the collaboration of Prof. J. B. Watson and Prof. Knight Dunlap, and this year in a course which I gave alone. The time allotted was two afternoon hours a week in the spring trimester of the second year, altogether twenty hours.

My first step was to find the standpoint of my students, many of whom had had courses in psychology at college. I asked them to state what relation psychology had in their minds to physiology and pathology. I was at once confronted with a lack of definiteness and agreement which is the inevitable consequence of the fact that there is but little mutual understanding among the teachers of psychology, and little applicability of what is taught either to the plain man's needs in viewing mental life, or to the physician's needs.

I found that most students had the conception that psychology deals with the mind as physiology deals with the body. They contrasted mental functions and physical functions, and had more or less vague notions of the doctrine of psychophysical parallelism which has governed science during the last fifty years or more. Most students, however, assumed an influence of mind on body and of body on mind after the fashion prevailing before the ingenious truce attained by Fechner's parallelism; and in this they evidently were prompted by plain sense rather than by any dogmatic theory. In the discussion there certainly was no evidence of any solid metaphysics worthy of that name and no realization of the often discussed and specially dreaded problem of interactionism.

I am not surprised at this state of affairs, for when I look around among my colleagues I find few well-defined attitudes. There are those who see no sense in studying mind beyond what is done in the physiology of the brain. There are, however, others who recognize the facts of suggestion, the rôle played by the emotions not only in hysteria, but even in Graves' disease; but just how the thing works, many believe to be beyond human ken. One of my colleagues expressed his views in last year's address before the Medico-Psychological Association, in which he emphasized the subjective character of the mental facts, suggesting in fact if not in word that mind can be of use to the physician in the form of symptoms, but not as causes and objective facts like the other objective facts of medical observation.

The difficulty lies in the hesitancy to accept a frankly biologic view of the reactions and behavior of man. As soon as mental attitudes and mental activities are accepted as definite functions of a living organism, mentation and behavior is treated as a real chapter of the natural history of man and animal, and psychology ceases to be a puzzle supposedly resisting the objective methods of science. "Mental attitudes" and "mental activities" certainly are doings and activities of definite individuals; we see them and prove them to be present or absent, or changed as attitudes and actions of others as truly as we know them in ourselves. We may know some of our own mental states in more detail; but that which counts is attitude, activity, and behavior, observable in any one, and sometimes rendered more accessible by inducing the subject to amplify his activities verbally or in other ways until we know the facts, that is, until they have been made objectively evident.

I am specially anxious to make plain what is meant by the fundamental assertion that what is of importance to us is as observable and as objective as any other fact of natural history. What is of importance to us is the activity and behavior of the total organism or individual as opposed to the activity of single detachable organs. It is more than cerebration; we must take our domain broadly as behavior and passive and constructive adaptation of the entire individual. It differs from the ordinary physiology because it represents an integration of biologic activity on a specific level through its having the characteristic of more or less consciousness and because of its hanging together by associative function. From the point of view of science, behavior and mental activity, even in its implicit or more subjective forms, is not more subjective than the activity of the stomach or the heart or blood serum or cerebrospinal fluid or the knee jerk. Each individual has his own mental activity, but to say that we cannot see it and make it accessible and understand it in others is a philosopher's scare like the statement that we can never know whether the world exists, because we know only mental states or processes. Common sense has never worried about the reality of the world. I hope we shall soon be agreed on the fact that we need not worry about the psychobiologic reality and the objectivity of those actions and internal workings of living beings which we call mentation and behavior. I should quit being a physician and a teacher if I felt compelled to doubt the possibility of my studying and knowing your minds and those of my patients well enough to draw practical conclusions from such knowledge. If solipsistic philosophy were true one might as well retire into absolute solitude. By making of mind something like the religious-philosophic concept of the soul, something opposed to the body instead of a function of the individual as a whole, traditional philosophy and psychology have rendered us a poor service.

The first step in a course of psychology for medical students is to restore in them the courage of common sense. It is not necessary to start the course with a discussion of the unconscious and the subconscious, and with hypnotism and psychanalysis and other specialized and more or less unfamiliar domains. On the contrary, I urge the student to trace the plain life history of a person and to record it on what I call the life chart; the result is a record of a smooth or broken life curve of each one of the main organs and functions, and in addition, a record of the main events of the life of the whole bundle of organs, that is, "the individual as a whole" and of the facts which determined and constituted his behavior. This realm of

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

objective and determinable facts of the individual as a person constitutes what we as physicians need to know as psychology. The science dealing with these facts I call psychobiology, in order not to step on the toes of the introspectionist who might want to reserve the term "psychology" for the traditional type of subjective psychology. Its facts are behavior in the widest sense of reactive and constructive adaptation of the completely integrated organism. We ask: What are the individual's assets: the reactive and associative resources in the form of effective and expressive activity and its abortive forms, conations, affections, cognition, discrimination, and reconstructive and constructive imagination? Under what conditions are they apt to go wrong and under what conditions can they be modified again for the better? You can readily see that we are dealing with the absolutely objective and positive facts, peculiar only in the way in which they hang together by association in the wealth of equivalents and combinations, and in the varying extent and depth to which they implicate the parts of the integrated organism. So much for the student's general orientation with its restoration of the common-sense attitude.

As an instance of the study of assets, we take up the Binet-Simon and other genetic standards and survey the successive epochs of human life and their psychobiologic problems: infancy; then the period of acquisition of signs and language; the early childhood passing into what Joseph Lee calls the "Big Injun" stage and the school childhood; the preadolescent and adolescent period; the period of emancipation; the period of adult aggressive life; the period of maturity; the matron's period; and the period of senescence—each with its own psychobiologic features and problems.

Within this broad and clearly biologic frame, the student becomes ready to see a proper setting for the more detailed and specific chapters, among which I take up first the cognitive-representative data: reactions to things present (sensation and perception), reactions to things absent (memories and images), reactions with ideas and words and concepts or orientation; all activities depending more or less directly on the collaboration of brain and sense-mechanism. Then we take up the affective processes which determine the general trend of association and involve, beside the brain, mainly the sympathetic system and internal secretions, as Cannon has so well shown lately; and then the overt actions, specified as effective and expressive, and the laws of habit-formation, memory and association, and conation or will and its relation to instinct. We then consider the various degrees of consciousness and attention; and we introduce the data of hypnotism and the subconscious determining influences shown in the association experiment.

On this ground, we take up the genetic account of several leading functions or instincts as given in Pyle's "Outlines of Educational Psychology" and incidentally the psychobiology of sex life.

A review of the nonmental components of the mental integrations, the foundation of fatigue, and waking and sleep states, of the share of the circulation, of internal secretion, and of brain organization, rounds off the course and leaves us with a well-checked outline of examination of the mental resources and reactive tendencies of any patient, to be used and developed in the third and fourth year courses in psychopathology and psychiatry.

Psychobiology as thus conceived forms clearly and simply the missing chapter of ordinary physiology and pathology, the chapter dealing with functions of the total person and not merely of detachable parts. It is a topic representing a special level of biologic integration, a new level of simple units having in common the fact of blending in consciousness, integrating our organism into simple or complex adaptive and constructive reactions of overt and implicit behavior. I contrast (1) mentally or more or less consciously connected reactions, and (2) nonmental reactions of individual detachable organs which may as well be studied in the test tube and isolated and then certainly give us no evidence of consciousness. With this frank contrast we avoid panpsychism and solipsism and absolute subjectivism and all the other bugbears confusing the medical and lay mind and the would-be scientific psychologists. We keep on the ground of common sense and teach the student to study individuals or persons, in addition to making a study of the special organs, and in this study of individuals we deal definitely with objective facts which we must learn to specify and demonstrate, to account for genetically, to study for their effects and for means of modifying them for better or worse, just as we study the heart functions and not only the murmurs and the lesions, and the kidney function and the carbohydrate regulation or any other objective fact of biology and physiology and pathology. Reduction of the essential facts to terms of an experiment of nature, and study of the modifiability of the experiment is the fundamental law and aim of medical science, and this holds clearly enough for the psychobiologic assets as well as for any other type of reaction.

In harmony with this conception, the concepts of mental and physical must undergo a readjustment, as the concepts of sunrise and sunset had to undergo a reinterpretation. Science deals with a world of things, facts, and relations appearing in several distinct levels or types of integration. Physics deals with one set of aspects of matter and ether; chemistry with another, namely, the laws of behavior of atoms and their affinities and combinations; physiology with a biologic level, that is, those objects and their parts which grow by reproduction and metabolism; and as psychobiology we treat the functions of total organisms which blend in more or less consciousness in a manner constituting a special level of integration which has been especially and most characteristically enriched by the interindividual and social development of language. This level of integration we treat as psychobiology when considered as actual functioning and behavior of living organisms. All that which constitutes psychobiology to the physician is, therefore, also physical as well as mental. We can further recognize an ultrabiologic level of facts when we consider the products of such functioning, as logic and mathematics or theory of relations, or as history and record of the human race, including also the more than biologic realms of fact, philosophy, and religion. In this way we obtain an orderly perspective of the various sciences, but eliminate the contrast between physical and mental.

It is desirable, I think, to make the student feel that he does not have to draw too sharp a line between mentally integrated and nonmentally integrated activities. Many reflexes or instincts or reactions can appear on

the physiologic level or on the psychobiologic level. The difference lies in the mode of hanging together, the setting and the extent and kind of possible interrelations.

On the physiologic level the reactions last as long as the stimulus, are commensurate with the stimulus, and occur as it were according to the laws and requirements of contiguity.

The entering into the psychobiologic level brings in a more extensive scope of potential links and interrelations with the laws of consciousness and of associative relations.

The reaction becomes part of what I describe to the student as a burst or geyser of daily activity, with laws of blending and laws of falling into trends laid down according to the principles which experience with this special level of biologic regulations must furnish us. The student must realize that the mechanisms of the psychobiologic level are not limited to the type of consciousness which we know in waking life and which most psychologists cultivate exclusively. Watson's work shows that there are many problems which can be studied accurately with practical disregard of the "contents of consciousness," as we are apt to call the "implicit" links of action. Many conditions will, however, become intelligible only if we take into consideration the special characteristics of special types of consciousness, such as the dream states, half-dream states, states of distraction, hypnosis, and special affective states, the study of which can do full justice to the fact that some of these special states will prove open to explanation and reproduction or at least facilitation by the introduction of detachable physiologic lifts, chemicals, narcotics or internal secretions, of which we know that they can produce modifications of the hanging together of psychobiologic trends.

To sum up: From time immemorial the physician has been urged to treat not only the diseased organs or the condition, but also the patient. And of late years we have learned to realize that indeed some disorders can be explained, and treated, as abnormal and unhealthy ways of the person rather than as disorders of any one special organ; rather as disorders of the combination and its behavior. Every medical teacher gives some advice on this topic of doing justice to the personality; oftenest, and probably too often, he feels that the talent for dealing with personality must be inborn and cannot be hammered in by any training.

Of late years the difficulties in the total unified adjustment and behavior of our patients have been more and more reduced to intelligible processes: defects of development, intellectual, affective, or conative, improper use of the assets, etc. Instead of mere vague ideas of something requiring special handling, we have today a growing body of facts in the way of habit disorders, harmful substitutions and the like which must be heeded in helping the patient to reach his best ground. How can the student be helped to command these facts most quickly? We teach him physics and chemistry and biology and physiology. Who teaches him the elements of these reactions which we call behavior and mentation? He enters on this field with confused and confusing notions; how is he to straighten them out?

The first condition for productive work in this field of psychobiology as in any other, certainly, is controlled procedure and methods of description and record and experimentation which come up to definite standards. It is clear that psychobiology and psychopathology have principles to offer which go beyond the dilettante realm and form a fairly clean-cut body of methods and helpful procedures: not only safe neurologic methods and safer methods of work with internal secretions as such, but also safer methods of inducing and directing associative and nonassociative processes and associative material serving the best demands of the various types of make-up.

The difference between modern psychology and the older form is that we can no longer be satisfied with mere plausible statements and amplifications of the obvious, but must test and verify objective facts under controlled conditions and controlled modifications.

In my own teaching, I am determined not to put curiosities and the sensational to the forefront. Students whose interest goes toward such sensational things can in time be reached even with this conservative scheme if they have the right stuff in them. On the other hand, stagy psychology can be maintained to advantage by but few teachers and few workers and it fails with the bulk of our clinical method. We must discourage the ever-lurking interest in the occult and semioccult and replace it by solid confidence in reliable methods and by determined interest in matters obviously calling for serious objective study.

This hasty survey might easily gain by further amplification. I trust it may give an idea of the entire practicability of a course of study of objective behavior and mentation useful and essential to every student and physician; likely to give a sane balance and to furnish protection against extreme and one-sided vagaries or equally unnecessary psychophobia, which have so long marred the efforts of physicians in their working with the personality of the patient as well as with the individual organs. Saner views will make us physicians juster and more capable and less likely to drive a lot of sensible but misguided people into obscure mystical cults and ourselves into passing fads and fashions, and empty squabbling before a justly distrustful public, and they also will make unnecessary that new profession of "clinical psychologist" and efficiency psychologist for which a medical training will become obligatory if we physicians show the sense and capacity to furnish the needed psychobiology as a necessary and obligatory part of our training.

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ABSTRACT OF DISCUSSION

Dr. Thomas J. Orbison, Los Angeles: This matter of parallelism I have not been able to grasp. Consider the phylogeny of the physical part of us and of the mental part of us—I cannot see when they join. Take our nervous system, from the ovum down through the nine months of intrauterine life in which evolution has speeded through so many centuries. We know that in a moment the organism is ready to go from one element to another, and the first breath the infant receives has changed that child so that it can never return one step. I have never been able to determine to my own satisfaction (and I suppose I never shall) how the physical and mental interact; how really intimate these two are, and where they differ. Probably I do not make myself clear, yet I would like to know more about what parallelism really means—how the mental and the physical come together, and is the soul a negligible quantity? If Dr. Adolf Meyer can understand such an ambiguous question as that, I would like to hear more explanation.

Dr. Josephine A. Jackson, Pasadena: I was glad Dr. Meyer brought up the point that personality is not some-

thing we are born with, but something we can have developed in us—something that can be hammered into us. Possession of "personality" connotes a knowledge and understanding of the reactions of the individual as determining his behavior. Each individual, because he is an individual, is different from everyone else; each has to be handled for himself alone. As Dr. Meyer said, treat the patient, not the disease. The individual differs in different periods of his life in his reactions; certain accidents and environments make him different; if we study we can understand and it will help us to handle the patient.

DR. ANDREW L. SKOOG, Kansas City, Mo.: I liked very much the statement Dr. Meyer made regarding common sense. He has gone over the field of preparation of the medical student, before his course of study, in psychology or morbid psychology, and the more or less confusion which exists in his mind. I think when we are teaching students either neurology or psychiatry, we should constantly bear in mind common sense. We are dealing with a complicated subject, perhaps complicated because of the preparation of the student when he appears before us. Therefore, to reiterate, bringing before the student common sense ideas is of the greatest importance.

The subject of objective psychology has been discussed thoroughly. I admire the work of Bechterew which has been done with animals. The study of animals is very interesting, and to these investigations may be added also that of infants and young children.

DR. CECIL E. REYNOLDS, Los Angeles: I would like to mention one point in connection with the question that Dr. Orbison has brought up. If we assume, accepting Dr. Stoddart's views, that disturbance at the synapses is a cause of confusional insanity—that the normal relation of the dendrites of the cortical cells is disturbed—then we can bring into relation the views that Dr. Dercum has expressed on the toxic origin of mental disease with the psychical manifestations we are familiar with; for example, in confusional insanity. In the same way, if you regard the condition of sleep as a normal retraction of the dendrites, it is conceivable that those things that most affect our mind in the waking state will cause persistent interlacing of the dendrites concerned, with the resultant persistence of thought, especially deeply rooted desires, symbolized and distorted in a dream.

DR. ADOLF MEYER, Baltimore: It would be unfair to delay the work of the section by an attempt to answer in full the question of Dr. Orbison, because it would mean to reiterate a great deal of what is contained in the paper. I can best illustrate what I mean by referring to the remark of Dr. Reynolds. He has drawn our attention to Dr. Stoddart's view of confusional insanity, as if he thought all mental disorders should be explained by neurone-retraction. Dr. Stoddart has, by the way, lately come out as the most extreme Freudian in the English language. I would like to ask who on earth ever saw those dendrites wiggle in exhaustion psychoses. How much more important it is to look for what we can see. We want to rehabilitate the study of that which we see in every patient; to study every activity, every function of the individual or personality as a whole for all it can teach us, before we enter on confusing discussions of pure and often improbable hypotheses. I eliminate psychophysical parallelism because it brings more confusion than help. To my mind there does not seem to be any necessity of cultivating confusion over that which does not exist. I think it is greatly to the advantage of our science and our standing before a sensible public if we speak mainly of things which we can demonstrate, rather than to speak about synapses, hypothetical disorders, of which at the present time very few people know anything. The main purpose of the introduction of an objective psychobiology into the range of objective facts of physiology and pathology is to enable us to remain on a ground of common-sense and direct observation of the activities of the individual as a whole—facts which we cannot afford to ignore or to handle without training.

COMPARATIVE RESULTS OF THE WASSERMANN TEST

A CLINICAL STUDY

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AND
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Several months ago we were consulted by a man whose future advancement to an important position was jeopardized because his record contained a diagnosis of syphilis based on a positive Wassermann reaction. He denied ever having had syphilis. A careful study of the history of this patient revealed the fact that while suffering with a sore throat, he consulted two physicians, one of whom diagnosed tonsillitis, and the other suspected syphilis. His blood was examined, found positive, and the condition pronounced syphilitic. He was placed on active treatment, and at the end of one year, four blood tests were made with contradictory findings. During the year preceding our observation, no treatment was taken. His history and a physical examination led us to believe that a diagnosis of syphilis had been made on unwarranted grounds. The patient's blood was submitted to five serologists, all of whom reported a negative reaction. A luetin test was negative. From the data obtained it was very questionable, in our judgment, that this patient ever had syphilis, and this opinion was rendered.

Shortly before this, we were consulted by a serologist who, out of curiosity, had examined his own blood, and to his surprise found it strongly positive. Rather than rely on another test made by himself, he requested us to submit several specimens of his blood to different serologists. His history eliminated a clinical diagnosis of syphilis; all of the tests were returned negative. It was fortunate that both of these patients were able to banish the thought of syphilis from their minds. On the other hand, probably all of us have observed examples of that unfortunate class of syphiliphobiacs who can never be convinced that they have not syphilis, when once told that the Wassermann test is positive.

For several years it has been our practice to have a Wassermann test made on every patient who has syphilis, or one who gives a doubtful history of syphilis. Our experience has taught us that a Wassermann test made by a competent serologist is of great value; especially is this so when two or more serologists agree in their reports. It may be said that the serologist exercises more care in his technic than does the physician in the study of his case. The Wassermann reaction is of only relative value, and should be considered with a careful history and study of the case. Under no circumstances should a diagnosis of syphilis be based on the result of the Wassermann reaction alone. The serologist's report should be positive or negative, and if it is at variance with the clinical expectancy, other specimens of blood should be submitted to several serologists for confirmation. Theoretically a negative Wassermann reaction should be uniformly obtained in a normal person, or one suffering with a disease other than syphilis, whereas a positive reaction should be found in all patients presenting active manifestations of the disease, except in the first few days of the chancre. A negative Wassermann

reaction does not exclude syphilitic infection, since such a test may be obtained in the early stage of chancre, or as a result of very active treatment, or in latent syphilis when the foci of disease are not active to the extent that antibodies may be detected by the test. In early chancre, spirochetes are present in abundance, yet the blood serum is usually found negative. In latent syphilis, a negative Wassermann reaction at times becomes positive after active treatment. In certain cases of nervous syphilis, the serum Wassermann reaction may be negative, and the spinal fluid Wassermann reaction positive. A formerly negative spinal fluid Wassermann test may become positive after an intraspinal injection of salvarsanized serum. Many competent observers have reported positive luetin tests with a negative serum Wassermann test.

Each serologist selects a technic which he regards as the best, and checks his work with known positive and negative controls. Should the Wassermann report vary with the clinical expectancy, especially if the test is repeated with the same result, the serologist is apt to regard his test as of greater importance than the clinical diagnosis. Certain factors, irrespective of the test itself, are regarded by the serologist as responsible for the discrepancy; these factors include the age of the serum, infected serum, nonsterile test tubes, the

TABLE 1.—NORMAL AND NONSYPHILITIC CASES

No. of Tests	Laboratory	Negative	Doubtful	Anticomplementary	Positive				Negative, Per Cent.	Positive, Per Cent.
					+	++	+++	++++		
107	A	93	6	0	5	3	0	0	86.8	7.4
97	B	91	0	2	1	2	1	0	91.7	4.1
64	C	59	0	1	0	3	1	0	92.1	6.2
96	D	71	1	9	10	0	3	2	73.9	15.6
97	E-1	88	1	0	0	3	2	3	90.7	8.2
87	E-2	79	1	0	0	3	2	2	90.8	8.0
33	F-1	32	0	0	1	0	0	0	96.9	3.1
11	F-2	8	1	0	1	1	0	0	72.1	18.1
32	F-3	30	1	0	1	0	0	0	93.7	3.1
38	G	36	1	0	1	0	0	0	94.7	2.6

character of the glass of the test tubes, changes in the blood the result of faulty metabolism, influence of alcohol, etc.

It frequently happens that there are conflicting reports submitted by several serologists, or that two or more reports from the same serologist do not agree. It can be readily understood, especially in such a complex test as is the Wassermann, why these discrepancies should exist in reports from different laboratories; but we cannot understand conflicting reports from the same serologist on specimens from the same individual withdrawn at the same time under identical conditions.

After we had discussed these discrepancies in the Wassermann reports with several serologists, it was decided that a series of blood specimens taken under identical conditions from approximately three hundred patients be submitted for examination, to ascertain to what extent the above-mentioned factors influence the Wassermann test. In the beginning of this study the tests were made by four serologists, and later three others cooperated, making seven in all. These serologists are all representative men connected with teaching institutions and hospitals. They have been designated in these reports as laboratories A, B, C, D, E-1, E-2, F-1, F-2, F-3 and G. All, with the exception of E and F, submitted one report; E submitted two reports with different antigens, F three reports with three different antigens, and G a majority report using three different antigens.

The blood was collected (*a*) from normal individuals who denied syphilis; (*b*) from patients in private and hospital practice who suffered with diseases other than syphilis, and (*c*) from syphilitics in practically every stage of the disease. With a few exceptions, all syphilitic patients had been under our care for some time, and several Wassermann tests on them had been reported before this study was undertaken.

This report is based on an analysis of 325 specimens of blood collected from 292 individuals, and submitted to at least four serologists. On thirty-three patients, two or more series of tests were made. Of the 292 individual cases, twenty-five were normal, seventy were suffering from diseases other than syphilis, and

TABLE 2.—COMPARISON OF TESTS BY DIFFERENT LABORATORIES

No. of Tests	Laboratory	Negative	Doubtful	Anticomplementary	Positive				Positive, Per Cent.
					+	++	+++	++++	
PRIMARY SYPHILIS CASES									
4	A	0	0	0	0	0	0	4	100
4	B	0	0	0	1	0	0	3	100
3	C	1	0	0	0	1	0	1	66.6
4	D	0	0	0	1	0	0	3	100
4	E-1	0	0	0	0	2	0	2	100
3	E-2	0	0	0	0	2	0	1	100
1	F-1	0	0	0	0	0	0	1	100
1	F-2	0	0	0	0	0	0	1	100
1	F-3	0	0	0	0	0	1	0	100
2	G	1	0	0	0	1	0	0	50
SECONDARY SYPHILIS CASES									
18	A	1	0	0	0	0	1	16	94.4
17	B	0	0	2	0	0	1	14	88.2
14	C	0	0	0	0	4	1	9	100
17	D	2	0	0	0	0	2	13	88.2
16	E-1	0	0	0	0	0	0	16	100
16	E-2	0	0	0	0	1	1	14	100
7	F-1	1	1	0	2	0	0	3	71.4
5	F-2	0	0	0	0	0	0	5	100
6	F-3	0	0	0	0	1	0	5	100
10	G	4	1	0	1	1	1	2	50
TERTIARY SYPHILIS CASES									
16	A	3	0	0	2	0	0	11	81.2
12	B	0	0	0	1	1	1	9	100
8	C	1	0	0	1	0	0	6	87.5
10	D	2	0	2	1	1	0	4	60
15	E-1	1	0	0	1	0	0	13	93.3
13	E-2	1	0	0	4	0	0	8	92.3
2	F-1	1	0	0	0	0	1	0	50
2	F-2	0	0	0	1	0	0	1	100
2	F-3	1	0	0	0	0	0	1	50
2	G	1	0	0	0	1	0	0	50

197 were syphilitics in various stages of the disease. The reports from the different laboratories were collected in groups under headings of normal persons, nonsyphilitic diseases, and primary, secondary, tertiary, eye, nervous, congenital and latent syphilis. A glance at the reports in table form is very interesting and extremely instructive, but space does not permit of their publication. We can only summarize the results of the study and state how far the various factors enumerated above may account for discrepancies in the Wassermann report. Approximately half of all the specimens submitted were collected in sterile test tubes, the remainder in nonsterile tubes; the sterile tubes were thoroughly cleansed in normal saline solution, plugged with cotton and sterilized in an autoclave; the nonsterile tubes were used as obtained from the dealers. In every case the blood was withdrawn through a sterile dry needle inserted into a vein in the forearm, and collected in test tubes of 5-c.c. capacity. The date of collecting the specimen

and the date on which the test was performed by each serologist were recorded with the object of determining how far the age of the serum affected the test. The condition of the stomach, whether full or empty, was also noted; the process of digestion was considered to be finished three hours after eating. In many instances, the blood was taken many hours after eating and after thorough purgation. In syphilitic cases, a clinical expectancy of positive, negative or doubtful was determined before the specimen was submitted, and of which the serologist was not cognizant until the completion of the study; this clinical expectancy was based on our personal knowledge of the case, the type and activity of treatment and the results of previous Wassermann tests. In every instance in which two

TABLE 3.—COMPARISON OF 168 TESTS REPORTED BY LABORATORIES A, B, C, D, E-1 and E-2

No. of Tests	Laboratory	Negative	Doubtful	Anticomplementary	Positive				Positive, Per Cent.
					+	++	+++	++++	
168	A	98	13	0	8	7	2	40	33
168	B	113	0	7	9	5	5	29	28
168	C	124	2	1	3	20	4	14	24
168	D	79	0	2	21	13	15	36	51
168	E-1	96	3	0	7	14	7	41	41
168	E-2	94	3	0	0	16	10	45	42

or more specimens from the same individual were sent at the same time or subsequently, different names were used.

In a series of twenty-nine cases, eight nonsyphilitic and twenty-one syphilitic, the blood in each instance was collected in fourteen sterile test tubes, seven of which were at once infected with virulent cultures of *Bacillus typhosus, Staphylococcus pyogenes aureus* or streptococcus, and an infected and noninfected specimen sent under different names to each serologist. In another series of thirteen cases with nervous diseases of suspected syphilitic origin, the blood serum Wassermann was comparatively controlled with the spinal fluid Wassermann. Of 197 syphilitic cases, eighty-eight were latent; in this group we include patients we know to be syphilitic, but who at the time of this study showed no clinical signs of the disease, irrespective of the duration.

On twenty-five normal persons there were twenty-seven series of tests, with no less than five reports in each series. All the serologists agree in a negative report in twenty-one series of tests and disagree in six. In each instance of disagreement, a positive report was not submitted by more than one laboratory. In two cases in which the tests were repeated, one serologist reported in one case, first a positive, then a negative, while another reported in the second case a negative at the first examination and then a positive.

Seventy-four series of tests were made on seventy patients, all of whom denied syphilis and presented no clinical evidences of syphilis, but suffered with some other disease. Of these seventy patients, there were four on whom the reports varied considerably, two or more positive reports being submitted by different serologists in each case. The blood of one of these patients was examined four times. This case is very interesting. On the first examination there were four positive and no negative reports; twelve days later three positives and two negatives; the following day five positives and one negative, and six weeks from the first examination, two positives and four negatives. On account of the great number of positive reports, this patient was repeatedly questioned regarding a possible syphilitic infection. He flatly denied any such infection, nor had he taken treatment for syphilis. The luetin test was negative. Analyzing the reports on this patient, we find but one laboratory, E, consistently positive; laboratory A reports one positive and three negatives; B, two positives and one negative; C, two positives and one negative, and D, first positive, then negative, again positive and finally negative. If this patient is to be considered syphilitic it must be solely on Wassermann tests, which, to say the least, are decidedly inconsistent. The second patient whose blood examination was repeated had four negatives and one positive at the first examination and six negatives and two positives at the second; positive tests were not obtained by the same laboratory twice. In the third case there were four positives and two negatives; the luetin test was negative. In the fourth case, six laboratories reported positive, two negative, one doubtful and one anticomplementary. This patient was referred by a neurologist with a diagnosis of brain tumor; the spinal fluid was examined with nine negative results and one positive. Of the remaining sixty-six patients whose blood was examined only once, all serologists agree in a negative report in fifty-six, and in ten cases one laboratory disagrees with the others in presenting a positive report.

Forty series of tests were made on thirty-six patients with primary, secondary or tertiary syphilis. All agree in a positive reaction in twenty-five; in fifteen they disagree. With one exception there was only one negative reported in each of the examinations in which the tests disagreed; this exception was noted in a patient with a tuberculous syphilid of the leg which subsequently responded to antisyphilitic treatment. In this case the laboratory reports showed seven negatives and three positives. Of the remaining fourteen tests in which one report differed with the others, the tests were repeated in four; in each case the second test showed a positive report by the laboratory which first reported a negative.

TABLE 4.—PERCENTAGE RESULTS OF FIFTY-SIX CASES BY ALL LABORATORIES COMPARED TO CLINICAL EXPECTANCY

Positive Expectancy		Negative Expectancy		Doubtful Expectancy	
Laboratory	Positive, Per Cent.	Laboratory	Positive, Per Cent.	Laboratory	Positive, Per Cent.
A	44.8	A	0	A	11.1
B	27.5	B	0	B	0
C	31	C	0	C	11.1
D	75.8	D	33.3	D	66.6
E-1	55.1	E-1	5.5	E-1	44.4
E-2	55.1	E-2	5.5	E-2	44.4
F-1	37.9	F-1	11.1	F-1	11.1
F-2	68.9	F-2	27.7	F-2	77.7
F-3	41.8	F-3	5.5	F-3	22.2
G	27.5	G	0	G	11.1

In eye and nervous syphilis, the Wassermann reactions varied considerably. In forty-one series of tests made on patients with various syphilitic eye or nervous lesions, there were twenty-eight disagreements.

One hundred and eight examinations were made on eighty-eight patients who to our knowledge had syphilis, but who at the time of the examination presented no clinical lesions. Many had been under constant treatment for various periods of time, and others had received recent active treatment. Repeated examinations were made on sixteen, thirteen of whom had two examinations, two had three examinations, and

one had four. The reports from the laboratories were so inconsistent and the reports from the same laboratory varied so extremely in cases of repeated examinations that an analysis is practically impossible.

Table 1 presents the results of all the tests made by the serologists on normal persons and nonsyphilitic patients, together with the number of tests performed by each. Analysis shows that a positive Wassermann test was obtained in from 2.6 to 18.1 per cent.

Table 2 presents the serologic findings in primary, secondary and tertiary syphilis; the percentage of positive tests in active syphilis varies from 50 to 100 per cent.

Table 3 summarizes the comparative results obtained in 168 series of tests, made by each of five serologists. An analysis shows that all the laboratories agree in their findings in 47 per cent. They vary in one result in 20 per cent., in two results in 12 per cent., and in more than two in 21 per cent. In other words, if a specimen of blood from the same individual be submitted to five serologists, there is one chance in two that the reports will agree.

In fifty-six cases, ten reports were received in each case from seven serologists. They have been classified according to a positive, negative or doubtful clinical expectancy, in each case. It will be observed that the laboratories reporting the greatest number of positive reactions, in cases in which a positive reaction was expected, also reported the greatest number of positive reactions when the clinical expectancy was negative or doubtful.

Analyzing the reports, we find that all the laboratories agreed in 21 per cent., they disagreed materially in 19 per cent., and varied in from one to four of the ten results in 60 per cent. Of the latter, 20 per cent. varied in one test, 20 per cent. in two tests, 12 per cent. in three tests, and 8 per cent. in four tests. In other words, if a specimen of blood from the same individual be submitted to ten tests by different serologists, there is one chance in five that the tests will agree.

Space does not permit of detailing the technic of each serologist; however, four used only specific antigen, one submitted two reports in each case using two different cholesterinized antigens, another submitted three reports, using two cholesterinized and one specific antigen. Comparing the positive reports submitted by each laboratory with the total positive results in all cases, they vary from 9.1 per cent. to 58.5 per cent. With two exceptions, the lowest percentages of positive reactions were obtained by the laboratories using specific antigen, and at the same time they agree more consistently with the clinical expectancy.

After carefully considering the results of the Wassermann test, the clinician cannot help but be disappointed in its accuracy. When we consider that various representative serologists report positive findings in from 2 to 18 per cent. of normal individuals, and that in active syphilis, in which the clinical diagnosis is certain, some serologists report only 50 per cent. of positive results, there is every reason to discredit the diagnostic value of the test. In suspected latent syphilis and in syphilis under active treatment, the most extreme variations occur, and in these conditions, in which the clinician needs its help the most, it is the least accurate. Notwithstanding the numerous discrepancies in the Wassermann reports, our experience with this test over a period of several years has convinced us that it is of great value and should be regarded only as a link in the chain of evidence for or against the disease.

From the experiments undertaken, we have proved to our own satisfaction, and to the satisfaction of the serologists associated in this work, that it makes no difference whether the blood is collected in a sterile or nonsterile test tube; whether infected with the above-mentioned pathogenic organisms or not infected; whether the specimen is one or several days old, or whether the blood is collected when the stomach is full or empty. In a few instances marked acidosis was present, but it did not influence the test from the standpoint of clinical expectancy. We are firmly convinced that the antigen used by the serologists is not wholly responsible for the discrepancies in the Wassermann report, and there is every reason to believe that a cholesterinized antigen will give a higher percentage of positive reports than a specific antigen. Leaving aside the element of personal equation, serologists cannot obtain uniform results unless a standardized antigen is employed and a uniform technic agreed on.

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DELUSIONS OF PERSECUTION AS A BIOLOGIC DEFENSE REACTION *

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LOS ANGELES

The life of the individual is a constant struggle, and is made up of a series of reactions having as their end the opposing of influences which tend to limit this life, or at least to prevent its development along the most favorable lines. Psychologists have come to believe that these reactions, which in their sum go to make up human conduct, are determined, in the main, by inherited tendencies which have been evolved in the struggle for existence of a long line of ancestors dating from the lowest forms. These tendencies have been developed in order to carry out the three great ends of organized beings; namely, defense from danger, procuring of food, and reproduction. The mechanisms to accomplish the first of these ends, requiring the most prompt and active reaction — protective mechanisms — were earliest and most firmly established.

These protective mechanisms vary immensely, from the methods of concealment of the lower forms of animals, through the armor of the turtle and armadillo, the venom of the serpent, the offensive odor of the skunk, the fleetness of the hare and the antelope, the teeth, the claws, and the strength of the tiger, to the capacity of man through his superior knowledge and reasoning power to invent weapons which more than compensate his lack of speed and strength.

Not the least of these human defense mechanisms, however, is developed in the ability of man to analyze the conduct of his fellows and to provide against any manifestations of hostility on their part. This ability varies immensely in different individuals, depending on their mental makeup, education and environment, state of health, good or ill fortune, etc., and in accordance with the laws of adaptation it tends to be sharpened by adversity and dulled by ease and comfort.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Also, for the development of the critical faculty, we are largely dependent on the harmonious working of the somatic and the psychic functions. The deformed or sickly individual is only too apt to be exaggeratedly sensitive and, expecting slights and opposition, to react excessively to trivial causes, and a similar attitude is even more frequently dependent on defective mental makeup. From the other side, an actually unfriendly attitude sharpens the critical faculty, and, in a person of morose and suspicious temperament, the reaction may assume a pathologic intensity. These instinctive defensive reactions, being earliest and most strongly developed, are apt to persist longest, and, in mental disorganization unchecked by normal inhibition, may be set off by stimuli ordinarily inadequate.

Our study of the somatic symptoms having failed to enlighten us greatly with regard to the phenomena observed in insanity, the tendency of late has been to return to the mental symptoms and to investigate them in the light of the reaction of the individual to influences from within and from without. To have pointed out this way is not the least service of the psychoanalytic school.

Certainly, among the most striking of all the symptoms of mental alienation is the development of delusional ideas. Among these ideas, those of persecution are especially frequent, and while they are particularly characteristic of paranoia, they are present, at times, in practically all forms of insanity.

Different as may be the modes of life of different peoples, ideas of persecution present, the world over, certain general similarities which alone would seem to indicate that they have some common basis.

In common with other delusions, they center about the personality, the ego, of the subject, and have, as their content, the notion that influences inimical to him are at work, to the prejudice of his person, his rights or his honor, or are endeavoring to injure him through those dear to him. The means supposedly employed to this end have varied greatly with the state of culture and environment, the sorcerer and the demon having today largely given place to the forces of nature as utilized in electric apparatus, wireless telegraphy, the dictograph, etc., though the rôle of poison is still as important as ever.

The mechanism of delusion formation has been much disputed, but all authorities are agreed on the importance, in the genesis of delusions, of fallacious perceptions, and particularly of the affective state of the subject. Into the causation of hallucinations we cannot enter here. It is, however, common experience that actual perceptions are greatly modified by the emotional condition of the individual at the time and may be wrongly interpreted if this state varies greatly from the normal. Conceptions arising on a basis of actual, though falsely interpreted, perceptions are themselves falsified and are readily connected into a delusional system. Since delusions are not the product of previous experience, they cannot be corrected by reference to it, but they are doubtless modified by the strong hereditary tendencies already alluded to. For their development and formation, a total alteration of consciousness is necessary, so delusion formation indicates a "general disturbance of the total psychic condition . . . Delusions are aroused by the variation of the affective condition which translates slumbering hopes and fears into conceptions. That these conceptions become delusions is due to the failure of judgment, this in some cases, through pathological emotional excitement, in others through clouding of consciousness, in still others through a weakness of the understanding." (Kraepelin). Now all of our reactions are originally determined by sensations arising from within and from without.

Crile has developed this idea in his recent works on "Anoci-Association" and "The Emotions." He asserts that trauma to the chest and abdomen stands first in the production of shock, and suggests that this is because these regions are the most abundantly supplied with "nociceptors," probably since they were originally the special points of attack of beasts of prey; hence stimulation here calls forth the most energetic neuromuscular defense reaction, and results in the greatest nervous exhaustion, which is translated as shock. This reactive tendency, transmitted through countless ancestors, has become so fixed that it persists today though the necessity for it no longer exists.

For Crile, the emotion of fear is the "representation of injury" and calls forth the same defensive mechanisms of muscular tension, increased adrenal and thyroid secretion, etc. These may be excited not only by actual physical contact, but also through the distant receptors, as by sight, hearing and smell.

Darwin long ago called attention to the fact that men through countless generations have attempted to escape from their enemies by fight, or by flight, and that the great exertions necessary in either case have, as their final result, palpitation of the heart, sweating, pallor, trembling and the prostration of complete exhaustion, phenomena identical with those of fear, and suggested that when fear is strongly felt, though there is no exertion, the same results tend to appear, through the influence of inheritance and association.

Cannon has shown that emotional states, such as fear, are accompanied by greatly increased adrenal secretion, which has the function of raising the blood pressure and energizing the muscles, while Crile's examination of the brain cells in animals subjected to fear alone, without trauma, has disclosed changes similar to those found after exhaustion and trauma. According to the last-named author, an animal "driven strongly by emotion" shows (1) mobilization of the energy-giving compound in the brain cells; (2) increase of epinephrin, thyroid secretion and glycogen, increased power of oxidation in the muscles; (3) accelerated circulation and respiration and raised temperature; (4) altered metabolism. All these to increase the motor efficiency while other organs not contributing to this end have their function inhibited.

Phylogenetic influences are so strong that though an enemy is not attacked physically, these weapons are nevertheless made ready. The emotion of fear cannot but suggest the idea of danger.

In the majority of cases of insanity, the earliest symptoms are unrest, sleeplessness and often disturbing dreams. The patient may be aware of a certain alteration in his consciousness of self and often enough we hear the complaint that "things look strange," and "everything is changed." We have all experienced the feeling of apprehension and unrest which seems dependent on sensations apparently rising up from the abdominal cavity, and the emotions so aroused are certainly akin to fear. Now, fear, being the emotional condition associated with the perception of danger, would naturally give rise to defense reactions, and if the cause for fear is unclear, no enemy being in sight, this defense reaction will not proceed to the actual physical preparations for combat, but only to the awak-

ening of conceptions of danger which, on account of disordered judgment-forming capacity, take definite form as ideas of persecution.

It may be objected that in paranoia, the form of insanity characterized *par excellence* by delusions of persecution, the genesis of these delusions is slow and gradual, and can hardly be connected with an emotional state. Also, fallacious perceptions, though frequently present, are usually developed later than the delusions. Now, the paranoiac possesses an originally defective mental constitution, in some ways resembling uncivilized man in his egotism and lack of altruism. He is naturally distrustful and suspicious, and, while his reasoning power may be good, he misinterprets ordinary happenings in the sense of his exaggerated ego and is ever ready to see opposition, if not danger, and to react to these misinterpretations, much as the savage does to the unfamiliar, by a defense reaction, that is, by ideas of persecution. Again, according to the views of Specht, paranoia has in its evolution the closest relations with manic depressive insanity, the ideas of grandeur developing in connection with the exaltation and increased feeling of self of the manic phase, those of persecution being similarly connected with the affective tone of the depressed phase.

Such are the considerations which suggest to me that delusions of persecutions should be looked on as a species of defense reaction traceable to the inherited instinct of self-protection.

From the work of Cannon and others it would appear that the internal secretions, especially those of the adrenal, the thyroid gland and the liver, play a part in the preparation for defense and are increased in strong emotions, notably in that of fear. May it not be possible that we have in this fact some explanation of the circumstances that delusional conditions, especially delusions of persecution, are so frequent at the times of presumably greatest change in the function of the ductless glands, namely, about puberty and the climacteric?

Possibly the further study of the functions of these glands, so much in the minds of the medical profession today, may throw a more definite light on this subject.

The Cancer Death Rate in New England.—The *Public Health Bulletin* of the Massachusetts Department of Health (May-June, 1915, p. 127) observes that the New England states generally have a higher death rate from cancer than any other group of states. The census reports for 1913 showed a cancer death rate of 78.9 per hundred thousand for the entire registration area of the United States. Each of the New England states has a cancer death rate higher than this. The rate of Connecticut (85.1) is the lowest; Vermont's, which is the highest, is 111.7. The rates of the other New England states are, respectively, Maine, 107.5; New Hampshire, 104.4; Massachusetts, 101.4, and Rhode Island, 93.3. Compared with Kentucky's cancer death rate of 48, these figures seem high indeed. They indicate that 6,817 persons died of cancer in New England during 1913. The *Bulletin* remarks that these figures do not necessarily signify that the people of New England are more susceptible to cancer than those of other regions. The proportion of inhabitants over 40, or at the cancer age, is greater in the northeastern extremity of the United States than in other parts of the country; and to this facts the Census Bureau attributes the relatively high cancer death rate in the New England States. In New England as elsewhere, however, the cancer death rate is higher than it should be; and the publication of these figures from the Census Bureau has stimulated an active educational campaign against the disease.

SOME FACTS CONCERNING THE BLIND

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Some facts concerning the blind population have been gleaned from the 1910 census of the United States, and have been thought sufficiently interesting to present in greatly condensed shape. Much has, of course, been omitted.

The total blind population of the United States is 57,272. Of these, 32,443 are males, and 24,829 are females. The male majority is doubtless largely due to the extra liability of males to accidents, owing to their occupations, etc. There are 62 blind persons in every hundred thousand of the population of the United States. There are 2,390,000 blind persons in the world. Egypt has more blind persons proportionately than any country in the world, having 1,325 to every hundred thousand of population.

The twelve countries having the least blindness are as follows: Belgium (before the war) had 43 blind persons to every hundred thousand of the population; Canada, 44; Netherlands, 46; Saxony, 47; New Zealand, 47; Western Australia, 50; Hong Kong, 51; Prussia, 52; Denmark, 52; Germany, 60; New South Wales, 60, and the United States, 62.

In the United States, the twelve states having the least blindness are as follows: North Dakota, 28 blind persons to every hundred thousand of the population; Wyoming 32; Washington, 38; Nebraska, 38; Minnesota, 42; Oregon, 44; New Jersey, 44; Montana, 44; South Dakota, 45; Colorado, 47; Idaho, 48, and Connecticut, 49.

The six states having the most blindness are as follows: New Mexico, 169 blind persons in every hundred thousand of the population; Nevada, 118; Arizona, 95; Kentucky, 94; Tennessee, 89, and Virginia, 80.

The excessive blindness in these states is probably due to the prevalence of smallpox in New Mexico, Nevada and Arizona, and the ravages of trachoma in Kentucky, Tennessee and Virginia. Mining accidents in the first three states also have much to do with the number of blind persons.

About half of the blind population are over 60 years of age. This is probably due to the fact that cataract, glaucoma, etc., are largely diseases of old age. It is quite likely that these figures are not entirely correct, as it has been found difficult to collect reliable data concerning the blindness of babies, as ophthalmia neonatorum is usually considered a disgraceful disease, and parents frequently endeavor to conceal its existence.

The six foreign countries producing the most blind United States residents are as follows: Ireland, 169 blind persons to every hundred thousand of the United States population; Canada, 168; Netherlands (including Belgium and Luxemberg), 158; Mexico, 148; England and Wales, 116, and Germany, 106.

These figures are probably due to the large number of immigrants from these countries, the large number of old persons, the ignorance of the Irish and the Mexicans, the insanitary life, medical ignorance, carelessness and superstitions of the two latter countries, and the hazardous mining occupations of the Mexicans.

The six foreign countries producing the least number of blind United States residents are as follows: Hungary, 14 blind persons to every hundred thousand

of the United States population; Italy, 19; Russia, 22; Austria, 26; Finland, 27, and Belgium, 46.

Of the male blind population, about 32 per cent. are single and about 67 per cent. are married, widowed or divorced. Of the female blind population, about 29 per cent. are single, and about 70 per cent. are married, widowed or divorced.

Of the male blind in the United States, 25 per cent. are gainfully employed, while only 5 per cent. of the females are gainfully employed. The gainfully employed are mostly native-born white persons, the foreign-born doing less to gain a living, and the negroes still less.

The six occupations chiefly chosen by male blind persons are as follows: farmers, 1,768 persons; broom makers, 665; musicians, 646; hucksters and pedlers, 401; piano tuners, 349, and chair caners, 242.

The six occupations least chosen by male blind persons are as follows: fancy workers, 6 persons; nurses, 7; saloons, 12; printing, etc., 13; hammock and net makers, 18, and organ grinders, 17.

The six occupations chiefly chosen by female blind persons are as follows: musicians, 167 persons; farmers, 127; servants, 120; laundresses, 109; knitters, 102, and fancy workers, 86.

The six occupations least chosen by female blind persons are as follows: insurance and real estate, 1 person; retail merchants, 1; newspaper carriers, 1; organ grinders, 1; news dealers, 2, and professional entertainers, 3.

7 West Madison Street.

INTRATRACHEAL ETHER ANESTHESIA IN THE SURGERY OF THE BRAIN AND SPINAL CORD*

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Intratracheal insufflation anesthesia has advantages over the older forms of administration, especially in the surgery of the brain and spinal cord.

Since the introduction in 1909 of this method,[1] intratracheal insufflation anesthesia has been employed successfully in the Johns Hopkins and many other clinics in all types of cases; but as its general use is unnecessary, it has been employed in this hospital chiefly in operations about the head and neck, and in the thorax and spinal canal. Its advantages over other methods in operations on the brain and spinal cord have been so striking that I feel it will not be amiss to call attention to some of them, in the hope that the method may receive a more careful consideration.

The distinguishing features of this method, as pointed out by Meltzer,[2] are as follows:

1. "By bringing the pure air directly to the larger bronchi, and by driving out the vitiated air from the bronchi through the force of the returning air stream, that part of the 'dead space' is eliminated which is represented by the mouth, pharynx, larynx and trachea."

2. "The practically continuous recurrent air stream prevents the invasion of indifferent or infectious foreign matter from the pharynx into the trachea."

Other advantages which it possesses over the various ordinary methods of ether administration will be mentioned below.

In perhaps no domain of surgery is a quiet, uniform anesthesia of such importance as in that of the brain and spinal cord; and for this reason a specially trained anesthetist is regarded as essential by many operators. Undoubtedly anesthesia in cases of brain tumor is more difficult than in the average surgical case; and this is due to the fact that in the presence of increased intracranial pressure the respiratory center is at a disadvantage, and consequently labored respiration and cyanosis are likely to be present. Such cyanosis, aside from its danger as a respiratory hindrant, may add enormously to the difficulties of a cranial operation, for there is a great increase in the venous bleeding from the scalp and the bone, an engorgement of the cortical vessels, and an increase in intracranial tension so great that the opening of the dura may be a dangerous procedure. Especially, perhaps, in the cerebellar operations is the matter of cyanosis important; for with tumors in the posterior fossa compressing the medulla, cyanosis of slight degree may be sufficient to cause respiratory paralysis. It was not an uncommon experience with the drop ether method of anesthesia to have a patient on the operating table suddenly cease to breathe; and the giving of artificial respiration under such conditions was often awkward and wearisome. Coughing, straining and vomiting also add to the difficulties of a cranial operation. One need only to have seen, during a coughing spell, the engorgement of the cortical vessels, the rapid herniation of the cortex through a dural opening, sometimes with rupture of the pial vessels, to comprehend the seriousness of such an occurrence.

Of the embarrassment incident to obstructed respiration and cyanosis, to coughing and straining during operation, the anesthetist has been relieved almost completely by the use of intratracheal ether anesthesia. The presence of a tube in the trachea prevents obstruction to respiration by the soft parts of the mouth and pharynx, and relieves the anesthetist of the burden of holding the jaw and shifting the head in order to give free entrance of air. This method allows a smooth, even depth of anesthesia to be maintained by a constant measured amount of ether vapor; thus cyanosis, straining and coughing may be avoided.

Very striking are the records of the pulse charts. For an operation of three or more hours' duration, the pulse line may be almost straight. Any deviation from the straight line, therefore, is significant and demands interpretation. The effect on the pulse rate of a sudden, sharp hemorrhage, for example, would be more strikingly registered. One has, however, a prompt and efficient method of artificial respiration should respiratory paralysis occur.

There are minor advantages to be mentioned. The Auer-Meltzer method permits ready manipulation of the head. The anesthetist may be entirely isolated from the operative field, and, relieved of the care of maintaining easy respiration, devote himself, undistracted, to the general condition of the patient.

Up to December, 1914, the insufflation method has been employed in this clinic thirty-five times in operations on the brain and spinal cord. I have studied the records of these cases with especial reference to the anesthesia, noting particularly the effect on the pulse,

* From the Department of Surgery, Johns Hopkins University.

1. Meltzer and Auer: Continuous Respiration Without Respiratory Movements, Jour. Exper. Med., 1909, xi, 622.

2. Meltzer, S. J.: Intratracheal Insufflation, THE JOURNAL A. M. A., Aug. 12, 1911, p. 521.

the duration of the anesthetic period, the presence and effect of cyanosis and hemorrhage, the time required to regain consciousness, and the postoperative complications, and have made comparisons with an equal number of unselected neurologic cases in which ether was administered by the drop method. In the series are included simple decompressions, osteoplastic resections, removals of the gasserian ganglion, cerebellar explorations, and operations on the spinal cord.

Pulse.—On Chart 1 is recorded the average pulse at beginning and end of the anesthesia, and its maximum rate in the course of the seventy operations—thirty-five by each of the two specified methods.

The difference in the effect on the pulse rate is quite marked. With intratracheal anesthesia the average increase was twenty-seven beats; with drop ether the average increase was forty-seven.

Time Consumed.—The average duration of the intratracheal anesthesia was two hours and thirty-four minutes; of the drop ether, two hours and twelve minutes. In one of the Auer-Meltzer anesthesias the period of administration was more than five hours. The operation, a severe and difficult one, was for the removal of an angioma from the spinal cord. During the entire five-hour period the pulse at no time exceeded 120 beats per minute; the average rate was 112. The anesthesia was uniform, and the patient's condition excellent throughout.

Cyanosis.—In these thirty-five cases there was cyanosis in none, while in four of the drop ether cases the cyanosis was so great as to cause considerable apprehension; and in two of the latter the operation was abandoned on account of hemorrhage and deep cyanosis.

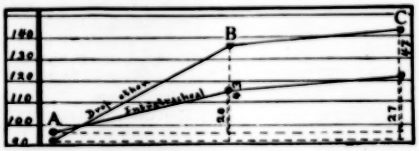

Chart 1.—Total cases: *A*, anesthesia begun; *B*, end of operation; *C*, maximum pulse rate.

Recently, however, in a case with anesthesia by the intratracheal method, cyanosis persisted throughout the operation. This patient died a few hours after operation, and at necropsy an enlarged thymus was found to be pressing on the innominate vein.

Hemorrhage.—In one case in which the intratracheal method was used, the operation had to be abandoned on two occasions because of profuse hemorrhage. The bleeding was attributed to a spongy and highly vascular condition of the bone; there was no cyanosis. No other case of hemorrhage occurs in this series.

Of the drop ether cases it is noted in six that there was "terrific hemorrhage"; four of the six were deeply cyanotic. In each case the pulse reached 180, and in two of the six became, for a time, imperceptible.

Time Required to Regain Consciousness.—While the records do not indicate the exact time at which the patients were believed to have regained complete consciousness, it has been noted repeatedly that the postoperative stupor passes off more rapidly after intratracheal than after drop ether anesthesia. This is what might be expected. The even flow of a definite, accurately controlled and constantly maintained percentage of ether vapor into the alveoli of the lungs enables the anesthetist to keep the patient just at or at any desired point beyond the borderline between consciousness and unconsciousness. The inconstant percentage of ether inhaled by the drop method does not admit of such precision, and consequently the anesthesia must be more profound. A patient anesthetized by the intratracheal method may have, therefore, less of the drug to eliminate. Again, if after the ether is stopped the tube be left for a while in the trachea and pure air driven through it, the elimination of the ether will be hastened.

Postoperative Complications.—That the presence of a soft tube in the trachea rarely does harm seems to have been proved. Meltzer[2] has shown that the presence of such a tube carrying a current of air into the lungs diminishes the liability to pneumonia by producing a return current of air sufficiently strong to prevent the invasion of foreign or infectious material. The number of our cases is too small to justify any inferences in regard to this point, except to note that no case of pneumonia occurred in this series.

So far as postoperative nausea and vomiting are concerned, neither method seems to have the advantage. Not in a single case has there been the slightest evidence of injury to the vocal cords, but in a few cases there was apparently a mild tracheitis; this was not sufficiently severe to cause the patients to complain, and was detected only by suggestive questioning.

In two cases there was bleeding from the pharynx, undoubtedly caused by the pharyngoscope. In one of these the patient vomited blood-stained material for a few hours after operation. This complication might be avoided by more careful manipulation of the instrument.

In the cerebellar cases the advantages of the intratracheal method are particularly striking.

In six cerebellar cases the anesthesia was given by the intratracheal, in eight by the drop method.

Chart No. 2 graphically shows the difference in the average pulse rates. With the intratracheal method the average increase in pulse rate at the end of the operation was 13; the average maximum increase was 17. By the drop method the average increase in pulse rate for approximately equal periods was 67, and the average maximum, 69. We have found the insufflation method almost equally superior in operations on the spinal cord, especially in the high thoracic and cervical regions.

Hey Groves,[3] in a recent article, says:

> The writer knows of no surgical operation in which the use of the intratracheal apparatus gives greater satisfaction than in that of laminectomy. Instead of having an anxious, troubled time in which the breathing is often embarrassed and the patient all the time fighting for life, as is the case in ordinary anesthesia given in the prone position, the intratracheal method gives a perfectly quiet and easy anesthesia under absolute control, the patient is never cyanosed, and he suffers very little shock.

There is only one case in this series in which we have had the opportunity of comparing the two methods in the same individual, and the difference is

3. Groves, Hey: Rhizotomy, Brit. Jour. Surg., 1914, ii, 246.

so striking that it seems worth while to report it in some detail.

This patient, R. C., was operated on five times between Nov. 22, 1906, and March 26, 1907. (Case reported by Drs. Harvey Cushing and H. M. Thomas[4]). Dr. Cushing's own words in regard to the anesthesia may be quoted: "Although, as is usual in these cases, the services of an expert professional anesthetist were secured, the patient took the anesthetic (ether) execrably, breathing badly throughout its administration. The resultant cyanosis was so great that in spite of the tourniquet there was considerable venous oozing, not only from the scalp, but from the diploe as well." Owing to the loss of blood and resultant fall in blood pressure, the opening of the dura was deferred.

No anesthetic was necessary for the second operation.

With regard to the third operation, Dr. Cushing notes: "Chloroform was employed, but the drug was taken just as badly as ether had been on the previous occasion. The tourniquet was again applied . . . much difficulty was again experienced in checking the dural bleeding."

Chloroform was again used for the fourth operation. "The patient again took the anesthetic in the worst possible fashion. There was extreme cyanosis and, as at the first operation, a great deal of bleeding was encountered near the median line." The operation was again postponed because of a marked fall in blood pressure and increase in subdural tension. The fifth operation, at which three subcortical cysts were removed, was done without an anesthetic and without any discomfort to the patient.

This patient reentered the hospital, Nov. 6, 1913, with a return of the previous symptoms. Nov. 19, 1913, a craniotomy under intratracheal ether anesthesia was performed by Dr. Heuer and two subcortical cysts were removed. The following note in regard to the anesthesia was made by Dr. Dandy: "As the patient had marked difficulty under the anesthetic at the previous operations, the intratracheal method was used at this time. It proved very satisfactory, and at no time during the operation did the patient become cyanotic or have any respiratory difficulty. The operation was performed without a tourniquet. There was very little bleeding; this was readily controlled, despite the amount of scar tissue present."

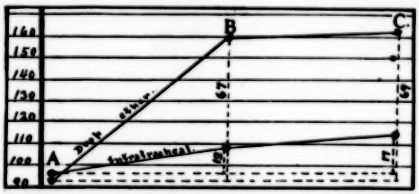

Chart 2.—Cerebellar cases: *A*, anesthesia begun; *B*, end of operation; *C*, maximum pulse rate.

In this case the time of operation was three hours and forty-five minutes. At the beginning of the operation the pulse rate was 120 and blood pressure 130. At the end of the operation the pulse rate was still 120 and the blood pressure 100.

I do not wish to convey the impression that I consider this case a typical one, for it is not very common to encounter a patient who so consistently takes both ether and chloroform by the usual methods so badly. However, disquieting anesthesias are more common in this class of cases than in any other — just the class in which a smooth anesthesia is most desirable and essential.

Although this case may not be considered an average one from the standpoint of the drop method, it has to be considered such from the standpoint of the intratracheal method, for practically all of our cases have behaved in like manner.

4. Thomas, H. M., and Cushing, Harvey: Removal of a Subcortical Cystic Tumor at a Second-Stage Operation Without Anesthesia, THE JOURNAL A. M. A., March 14, 1908, p. 847.

ADVANTAGES OVER OTHER TYPES OF ANESTHESIA

Local.—While this method is rarely employed in this country, it is nevertheless quite popular in a number of the foreign clinics, notably those in Germany. Its popularity abroad may be attributed, at least to a large extent, to the fact that many of these patients are very difficult subjects for general anesthesia. In such subjects the difficulties of anesthetization are increased in operations on the brain, owing to the awkward posture and frequent changes in the position of the head which are often necessary. In these clinics postoperative pneumonia is relatively common after a general anesthetic.

Advocates of the local anesthesia method claim that there is less loss of blood because the operation can be done with the patient in a sitting or semiprone position. On the other hand, operators who have tried both methods state that there is no appreciable difference in the degree of hemorrhage. However, if one is desirous of having the patient in the sitting posture, the intratracheal method can be used as easily and efficiently as with the patient prone.

Operations on the brain under local anesthesia are a severe trial to the patient, necessitating two-stage operations; added to this is the psychic effect on the conscious patient produced by the sights of the operating room.

The intratracheal method has all the advantages of the local method without its disadvantages.

Intrapharyngeal. — As we have had very little experience with this method, the criticism must be entirely theoretical.

There is perhaps no essential difference between these two methods, since they are both based on the same principle—the delivery of a constant stream of air, containing a known percentage of ether, directly into the trachea and to the epiglottis, respectively. There are a few minor points in favor of each, and while one clinic employs one method, another clinic may employ the other with equally satisfactory results.

With the tube in the trachea, the "dead space" is much smaller than when the tube simply passes down to the epiglottis, and therefore the percentage of vitiated air constantly present is correspondingly smaller. The intrapharyngeal method sometimes necessitates the presence of a second tube in the stomach to prevent the accumulation of gases there. This is unnecessary in the intratracheal method, provided one is certain that the catheter is in the trachea before driving in the vapor.

With the tube opening directly into the pharynx, one would expect an occasional obstruction to occur, owing either to an accumulation of secretions or to the soft tissue occluding the opening. This cannot happen when the tube is in the trachea.

Again there arises the point before emphasized in regard to postoperative pneumonia. The intratracheal method seems to lessen the chances for this complication by means of the recurrent stream of air which it produces, an asset not possessed by the intrapharyn-

geal method. I should expect to find pneumonia more common following the administration of ether by the intrapharyngeal than by the intratracheal method.

The chief point of advantage in favor of the intrapharyngeal anesthesia seems to me to be the ease with which the intubation can be done. However, the introduction of a tube into the trachea itself is a simple matter and requires only a few moments.

The technic for the administration of ether by the intratracheal method has been described so fully in other publications, especially those by Meltzer and Auer, that it will not be necessary to go into it here, as our technic is essentially the same, using the Jackson direct pharyngoscope for introducing the tube. There are, however, a few points in this connection that should be very strongly emphasized.

1. The patient should be thoroughly anesthetized before an attempt is made to introduce the tube; otherwise, this procedure will cause gagging or coughing—factors which often are responsible for the failure of the method.

2. Care should be exercised in introducing the tube, especially if a pharyngoscope is employed, to prevent undue injury to the mucous membrane of the mouth and pharynx.

3. One must be certain that the tube is in the trachea and not in the esophagus before driving in the ether vapor. This may be difficult at times; when in doubt, it is well to drive a stream of pure air through the tube and observe the abdomen for a few moments to see if it distends. We have had two cases in which this mistake was made; but fortunately the error was discovered before serious damage was done.

In some cases the tongue may so fold itself around the tube as to cause obstruction to the return column of air. This difficulty is overcome by introducing a soft rubber double-barrel pharyngeal tube, along the side of the tracheal tube, to the epiglottis. This tube is 7 inches long and has a guard on one end to prevent its slipping down the throat.

CONCLUSIONS

1. Intratracheal ether anesthesia has its greatest field of usefulness in operations on the head, neck and spinal region. The results in cerebellar cases are the most striking.

2. This method is much safer than the drop ether method; the anesthesia is smoother and is more readily controlled. It also offers the most efficient means of artificial respiration.

3. A review of thirty-five cases of anesthesia by the drop ether method and thirty-five by the intratracheal method shows that the pulse is more regular and less rapid under the latter and that hemorrhage and cyanosis are reduced to a minimum.

4. Although the use of the intratracheal method in the surgery of the brain and spinal cord is becoming more general, it has by no means attained the popularity it deserves.

A Little Knowledge of Health.—The old and oft-repeated saying, "A little knowledge is dangerous," is not wholly true; for even a little knowledge on health matters is better than complete ignorance. But no one should be content with just a little knowledge as long as there is opportunity to get more. Neither should we be puffed up with or overrate the little we have, but, as the advertising man says, "keep everlastingly at it" to get more.—*Bulletin Chicago School of Sanitary Instruction.*

INTRANASAL ANTRUM OPERATIONS

WITH REPORT OF NINETY CASES *

HARVARD McNAUGHT, M.D.
SAN FRANCISCO

That not all the problems connected with the pathology and treatment of antral diseases have yet been solved is evidenced by the differences of opinion expressed in nearly all discussions of this subject. As an instance of this we find men of note stating the proportion of cases of dental origin as all the way from 8 per cent. (Hajek) to 100 per cent. (Tilley). Opinions as to the operative or other procedures necessary in diseases of this cavity vary: probe puncture washing, removal of nasal wall leaving turbinal intact or sacrificing some portion of it, and the various forms of oronasal operation being types of treatment advocated.

It is the object of this paper to report, as briefly as possible, the results of ninety consecutive intranasal operations on the antrum of Highmore for chronic suppuration, and to give some observations made incidental to these. The pathology and anatomy will be omitted, as they are familiar to all. I would, however, like to digress from the strict text long enough to call attention to a mooted point in the pathogenesis of this disease, namely, the dental or nasal origin of the trouble. Dentists are becoming more insistent that from 75 per cent. upward of infection comes from the teeth. The experience of most rhinologists will not bear this out. On the contrary, time has steadily reduced the proportion until we are now willing to concede only that from 8 per cent. (Hajek) to 20 per cent. (Skillern) have such origin. Roentgen-ray examination will not definitely decide this question. Osteitis being present, it has been shown in many cases to proceed from the antrum to the tooth, so its mere presence will not alone be determinative of the offending factor. Our main proof at present must come from clinical evidence. In my series of cases very few have had to be referred to the dentist, and the conclusion must be drawn that the teeth alone are comparatively seldom responsible.

During the past three years I have operated in ninety consecutive cases of chronic antral suppuration by the intranasal route and observed them until the present time. The first patient was operated on three years ago and the last three months ago. One cannot say how long the antrum must drain before deciding whether reoperation by the radical method is needed. Personally, I have fixed an arbitrary standard of eight months. A few cases were observed for as long as a year and then the patients disappeared. Later they came back for some other condition, at which time it was noticed that the antrum trouble was cured. During the period of observation it was noted that the discharge steadily decreased in volume and altered in character, becoming thinner and more mucoid. One must conclude that a much longer period than eight months may be necessary to effect a cure in some cases. The objection frequently raised, that few patients will consent to such a prolonged treatment, has not been sustained in my cases; the immediate relief of all symptoms complained of (except pus formation), together with the probability of avoid-

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

ing a more severe operation under general anesthesia, were sufficient inducements to my patients to continue treatment. Moreover, they were assured that if ultimately the radical procedure had to be resorted to, it was already half accomplished by having done the intranasal part.

In this series not one failed to be promptly relieved of systemic and referred symptoms. At present in nine cases there continues to secrete a gradually lessening amount of pus. Only in four cases was reoperation ultimately necessary by the radical method. In these four cases cystic and polypoid degeneration of the mucous membrane were found which precluded a cure from drainage and aeration alone. The systemic treatment of some of these patients should be mentioned. In some cases we suspected syphilis in spite of a negative Wassermann, and these were cases of delayed healing. Mixed treatment brought about a rapid betterment of the local condition.

I will mention briefly the types of operation employed intranasally:

First, those contemplating drainage by removal of all or a part of the lateral wall beneath the inferior turbinate. This has been lauded by some, but it will fail to cure all but those requiring only brief drainage, as invariably the turbinate droops and hypertrophies until it closes the opening, thus defeating the object of the operation.

Second, those operating by the enlargement of the natural opening in the middle meatus. These operations are defective and useless, both from a surgical and pathologic point of view; surgically, because they necessitate drainage from the highest point of the antrum; pathologically, because the epithelium of the mucous membrane in chronic disease has lost its cilia and the cells have changed to the cuboid or pavement type and can no longer propel the pus toward the opening.

Third, those in which the nasal wall is removed from the floor upward, with the sacrifice of some portion of the inferior turbinate. Krause's classical operation, consisting of removal of the anterior third of the turbinate and opening through the lateral wall, I consider gives the best results. Reeves has devised a universal antrum punch with which he removes the nasal wall and middle third of the turbinate, beginning his operation in the middle meatus and biting down to the floor. I can recommend his instrument as the best I know of for antral wall removal. I cannot, however, endorse his operation, after having used it in fourteen cases. The chief objections to it are that the field of operation is not easily seen and it is not accessible for after-treatment. Moreover, there are two turbinal ends left to granulate, and the anterior portion of the turbinate prevents the expulsion of the secretions from the nose and subsequently has to be removed.

The method used in my series is practically that of Krause, though modified lately by the advent of Reeves' punch. This modification simply does away with the use of snare and scissors as the turbinal is bitten out by the punch. After anesthetizing the lateral wall with powdered cocain and epinephrin, a probe puncture is made and the antrum filled with 1 per cent. novocain solution with a few drops of epinephrin added. After fifteen minutes a painless and bloodless operation can be done. With a Wilminski perforator, the antrum is broken into in the middle meatus about one-half inch behind the anterior end of the inferior turbinate. Pressing down firmly, the wall and turbinate are crushed through to the floor. Reeves' punch is then used to remove the fragments and enlarge the opening. No packing is used at any time. In the subsequent treatment a nasal douche is not used, as I have found that it not only favors granulation formation, but actually prolongs the discharge of pus. With a curved cotton-wound probe, the opening is painted weekly or oftener with strong silver nitrate solution until healed, and no difficulty has ever been found in keeping it patent. Improvement takes place very quickly in some cases, when apparently at a standstill, if the interior of the antrum is painted with increasing strengths of silver nitrate solution, using as high as a 40 per cent.

One objection that has been made to the Krause operation is that the anterior end of the turbinate should not be sacrificed, as it has a function. The only actual function I can see is to properly deflect the air current to the middle and upper meatus. The loss of this attribute, however, produces no ill results that can be observed. Another objection urged is that a dry nose and pharynx results. A dry nose has never resulted, in my experience, as there is always too much turbinate in these cases and the open antrum furnishes more secretion than normal.

The advantages are that drainage is adequate in spite of the fact that frequently the antral floor is below the nasal. Intra-antral application can easily be made. The opening is so placed that the expiratory blast of air produces a suction on the antral secretions and expels them from the nose, instead of simply on the floor of the nose. It might be mentioned that in cases in which antral disease is complicated by ethmoidal or frontal involvement, the antral operation is the one of election. Drainage of this sinus will so reduce the swelling around the ostia of the other sinuses that no subsequent operation may have to be done, or if it be found necessary later to open these, the diseased area will be much more limited.

The results of the intranasal operation have been so satisfactory that I can but urge that the treatment of chronic antral infection be, first, thorough intranasal operation; second, a period of observation during which little treatment is called for; and third, that if drainage for eight months or longer fails to cure, the radical operation be done.

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ABSTRACT OF DISCUSSION

DR. JOHN J. KYLE, Los Angeles: I would like to repeat the statement I made last week at the Pacific Coast Eye and Ear meeting, that disease of the antrum is a condition that we as specialists frequently overlook, and that most of us in our haste only have our attention drawn to the suppuration of the sinuses by the complaint of the patient. Dr. McNaught evidently has had quite an experience. To have treated ninety cases in such a short period of time is suggestive that this disease is a very common one. In the beginning of my practice I favored all intranasal operations, thinking that there was a minimum amount of danger; but in later years I have come to think more particularly of the Denker combined with the Caldwell operation. If I do the Denker operation I am pretty sure to get positive results; if I do a Krause operation I am not certain. I have come to look on the use of vaccines after doing the radical operation as bringing about quicker results than when I depend on the operation alone.

DR. CULLEN F. WELTY, San Francisco: I think it is fitting for the whole field of rhinology to have clear indications, primarily, as to the dividing line between acute and chronic infections of the antrum of Highmore; as to just how long an acute infection can continue, and when it becomes chronic. Requisites for chronicity which I have established for myself (there may be many more), are polypi in and about the middle meatus, polypoid hypertrophy of the middle turbinate, and a wash water that continues to contain cheesy pus foci. In such cases I have performed the Luc-Caldwell operation, and I will say that the pathologic condition of the mucous membrane is such that I am convinced beyond a question of doubt that they could not recover with an intranasal operation. I am of the opinion that a suppuration of the antrum of Highmore not accompanied by the mucous membrane changes spoken of before, can be cured by various minor operations—as washings by the needle, or by irrigations through a tooth root. Such minor procedures that do not destroy the integrity of the nose, are certainly preferable, if one can accomplish the results. It has been my experience that the cases that could not be cured by the procedures spoken of, would not be cured by intranasal operations. Some years ago I tried the intranasal operations and they were not satisfactory in this, that the openings close and the patients do not recover. It is impossible to make smooth the wall that separates the antrum from the nose. To report ninety cases of chronic suppuration of the antrum of Highmore is indeed quite remarkable. In conclusion my inference is obvious. Cases were submitted to the intranasal operation that would have been brought to healing by less formidable procedures, and I am confident that a certain given percentage did not recover. Or if they did, they have relapsed. We should no longer entertain operative procedures for drainage; only for complete cure.

DR. WILLIAM R. MURRAY, Minneapolis: I do not agree with the last speaker that the intranasal method of operating is practically useless. My experience has been that the intranasal operation is very satisfactory in a large proportion of cases of chronic maxillary sinusitis. There is a class of cases in which a Denker or Caldwell operation is indicated, but I believe that in the average chronic case the less radical operation is satisfactory. I have been partial, for a number of years, to the Mikulicz-Krause operation. It is attended, however, by some disadvantages. Crusting frequently continues for a considerable time after the operation; an unnecessary amount of the inferior turbinate is sacrificed; we cannot gain access to the antrum in sufficient degree to remove all diseased bone and tissue which frequently exist. Recently I have been modifying this Mikulicz operation by combining with it the internal Denker operation, thus removing a portion of the anterior wall, a portion of the nasal wall of the antrum, obliterating the angle between the anterior and nasal walls and removing only the anterior end of the inferior turbinate. This allows inspection of the antrum, curetting if necessary, and gives a free opening for ventilation and drainage.

DR. WENDELL C. PHILLIPS, New York: Inasmuch as there seems to be some controversy in regard to the method of operating in chronic disease of the antrum, it would be advisable for the men to report not only their own experience, but the methods that are being followed in the various sections of the country. In the large clinics in New York, except in radical operations done in connection with the Killian frontal ethmoid and sphenoidal sinus operations, the intranasal operation prevails. That is the operation done almost entirely in our large clinics there. That is the operation I do myself. Now in regard to the number of cases which Dr. McNaught has reported, it would seem to me that if the doctor has a large out-door patient practice it would not be at all surprising to get the number of cases which he has mentioned.

DR. H. B. GRAHAM, San Francisco: There is absolutely no mistake about diagnosis here. These are chronic suppurative maxillary cases. All of the cases in the clinic have been handed over to Dr. McNaught, so that they have not been separated. In the latter part of the period he has confined himself mostly to the Krause operation to see what the effect would be. These cases are not cases of acute maxillary sinusitis in the least; they are cases that have been observed in the clinic for a year to a year and a half before operation, so we know what we are doing so far as operating on acute or chronic cases is concerned. I have had a number of shocks in my life, but one of the most interesting shocks was a case in which I operated in Dr. Hajek's clinic in Vienna, a case of double chronic maxillary sinusitis, on which I did a Krause on one side and a Denker operation on the other. The patient went away to the country after I had operated on her, and came back in a month's time, and the side on which I had done a Denker, under the supervision of Dr. Hajek, was suppurating at a very rapid pace, and the side on which I had done the Krause was entirely well. This does not cover all cases, but it helps out, and it helped me by leading me afterward to adopt the Krause in preference to the radical operation. I think it is well not to take out too much of the mucous membrane of the antrum. We were surprised sometimes after leaving in a markedly polypoid mucous membrane and later operating in the case to find a nearly normal mucous membrane, after it had been properly drained. I have noticed in our work that often we find a polypoid condition of the mucous membrane and on doing the Krause the patient gets entirely well. So in case one has a polypoid condition of the mucous membrane, to brand that case as a nonoperable intranasal case is not correct. That case may recover by simply giving proper drainage and then not using too much water. We have found in all of our intranasal work that the less moisture following operative procedure, the better for the patient. This applies to the frontal sinus and to the radical operation as well as to the acute cases. We wash them out occasionally and clean out the crusts and get the mucus and pus out by applications.

DR. FRED STAUFFER, Salt Lake City: I would like to give my experience in private practice, and I wish to emphasize the remarks just made by Dr. Graham with reference to the importance of establishing proper drainage after curettage. I believe the operation as reported is one that should be tried in nearly every case before a radical operation is performed. That has been my experience, and I believe if the opening is made sufficiently large and one removes a sufficient portion of the wall between the antrum and the nose, the majority of the patients will get well, for the reason that polypoid degeneration is nearly always due to irritation by pus that has been dammed back, and if perfect drainage is secured the mucous membrane will take care of itself. I believe the only cases that really need the radical operation through the canine fossa are those in which the bony walls are involved. I think the intranasal operation should be preferred because patients will consent to an intranasal operation when they would not to a radical operation, and a very large percentage get well by using this operation.

DR. JUSTUS A. MATTHEWS, Rochester, Minn.: As to the frequency of maxillary sinusitis, we see a great many patients who do not come to the clinic for local symptoms in the nose and throat, but for general operation for various troubles, and one of the most impressive things is that a large number of them have chronic maxillary sinusitis with marked symptoms and even nasal discharge. We go over these cases by routine if there is nothing special that indicates the Roentgen ray, and find in a great many cases chronic sinusitis with local symptoms. I think if the men who doubt the frequency of chronic sinusitis would make a routine examination they would find it is much more frequent than they have heretofore believed.

DR. NORVAL H. PIERCE, Chicago: I believe Dr. Matthews is correct. Chronic maxillary sinusitis is very much more frequent than I had supposed up to a recent time. I know the postmortem findings show maxillary sinusitis in a tremendously high percentage of cases in individuals who have had no history of sinus trouble. There was a great controversy some years ago when a speaker before the London

Laryngological Society told the members he had operated in a great number of cases of sinus trouble in a rather small town, and as I remember, Sir Felix Semon drew attention to it. He figured out that in this town—which had something like one hundred thousand inhabitants—this operation was out of all proportion to the number of inhabitants, in general inferring that the surgeon was getting too enthusiastic in opening the antrum. So that immediately after that there was a very strong conservatism set in—one of the phases in our work of opening the sinus—and then it took on renewed activity, until today some of us are very conservative regarding the advisability of opening the antrum by the radical operation. I have come to the conclusion that suppuration within the maxillary sinus is much more frequent than we have heretofore believed, from the habit I have gotten into of washing out every case of nasal trouble through the natural opening. There is some variance in opinion as to how many antrums may be irrigated through the natural opening. I do not wish to mislead you at all, or to pose as having extraordinary skill, when I tell you that I can irrigate through the natural opening usually more than 90 per cent. of the patients who come to me. Occasionally I will have to break through the wall, but in a vast majority of cases I get through the natural opening with a Morrell Mackenzie cannula, and it is surprising how many cases show pus—free or agglutinated—in cases that show no shadow of any sort, or syphilis.

DR. G. C. KNEEDLER, Pittsburgh: One point of considerable importance to my mind is the manner in which curettage of the antrum has been done. A curet can be conveniently made by seizing a piece of gauze with the tip of a forceps. With this protected instrument polypi and other foreign matter may be removed without injury to the antral mucosa and the subsequent necrosis of bone which frequently follows the use of a metallic curet.

DR. HOWARD YOUNG MCNAUGHT, San Francisco: I do not think that Dr. Welty needs any specific answer to his insinuation that there was no such number as ninety cases operated on in this city by one individual in three years. I have operated on a great many more than ninety during that period, but this was a series of cases I undertook for one particular purpose. Dr. Matthews took the words out of my mouth, that if a little more care were taken in washing out our cases and diagnosing conditions, more chronic antral disease would be found. However, the results that I have given you are a little better than in some series, and it was to stimulate the accumulation of statistics on this point that I presented the paper. It is time that we definitely understood and agreed as to which is the preferable way of operating. When it comes to the radical operation, I follow the Luc-Caldwell method as the operation of election.

Reliable Death Reports.—The entire public health movement is based on the possibility of diminishing death and sickness. Our knowledge of the cause of death is based on reports of physicians and coroners. The expenses to the community are so heavy, and the necessity of prevention of disease so obvious, that the greatest obtainable accuracy ought to be available, and only the results of verified diagnosis used. Universal autopsy practice is unlikely. Education as to the needs of autopsy for the sake of raising the standard of medical practice and diagnostic skill, and for the sake of public welfare, will slowly prevail against religious objection and racial sentiment. In the meantime we have at hand a means of gathering reliable data by separating the records of death based on autopsy or other equally valid verifications of the cause of death, from deaths which were neither preceded nor followed by sufficient skilled medical or pathologic observation. By such a method we should attain two important objects: We should gather facts concerning the cause of deaths against which little or no criticism could be brought, and we should have parallel records of causes of deaths based, in many instances, on surmise or insufficient scientific observations.—Haven Emerson, M.D., *American Journal of Public Health*, August, 1915.

THE USE OF CONVALESCENT AND NORMAL BLOOD IN THE TREATMENT OF SCARLET FEVER*

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Beneficial effects have been obtained at the Willard Parker Hospital during the past seven months in the treatment of severe forms of scarlet fever with intramuscular[1] injections of fresh human blood, either convalescent or normal. In a number of such patients, in whom the prognosis seemed doubtful and occasionally even absolutely poor, the life saving effect of from 6 to 8 ounces of blood, repeated once or twice at intervals of four or five days, has encouraged us sufficiently to recommend the treatment in the severer forms of the disease.

The intravenous injection of fairly large quantities (from 2 to 3½ ounces) of convalescent serum has given good results in the hands of Reiss and Jungman,[2] and of R. Koch.[3] This requires greater skill, and necessitates wasting more than 60 per cent. of the blood. These disadvantages are easily avoided by the simple intramuscular injection of whole citrated blood, especially as it has been shown by Meltzer and Auer, and by Morgenroth and Levy that absorption from muscle is very much faster than it is from subcutaneous tissue. In fact, the rapidity of action of substances so injected approximates very closely that following an intravenous injection.

Cases of scarlet fever may be divided roughly into two groups for purposes of blood injection:

1. The early toxic or malignant scarlet fever cases which are seen between the first and fourth day of disease, and show the clinical picture of delirium and restlessness, intensive purple or petechial rash, moderate glandular enlargement and severe angina, with a slight exudate over the tonsils, uvula, and pillars of the fauces. These cases are suitable for the intramuscular injection of convalescent blood, taken from second or third week convalescent scarlet fever cases. Such convalescents are generally available in the wards of large contagious disease hospitals. They should be free from syphilis and tuberculosis. A record of individuals, who are willing to act as donors, for a suitable consideration, can be kept by the hospital authorities. The donors themselves, or the blood taken from them freshly and citrated, may be sent to the homes of private patients, and the treatment can be thus made available for use in general practice. Convalescent blood will deteriorate after a month or two when kept in the ice-box, and it is, therefore, preferable to use only fresh blood. The question of using donors who are several months convalescent may be considered and should be tried on a larger scale.

The effect of convalescent blood in these early toxic or malignant cases of scarlet fever is seen in a critical drop in temperature beginning about six hours after the injection and ending in from twenty-four to

* From the Research Laboratory and the Willard Parker Hospital, Department of Health.

1. Zingher, Abraham: A Simple Syringe Method for the Transfer of Blood from Donor to Recipient. Its Application in the Treatment of Scarlet Fever and Other Conditions, Arch. Pediat., 1914, xxxi, 912.
2. Reiss, E., and Jungman, P.: Die Behandlung schwerer Schlarlachfälle mit Reconvalescentenserum, Deutsch. Arch. f. klin. Med., 1912, cvi, 70.
3. Koch, R.: Ueber Scharlachreconvalescentenserum, München. med. Wchnschr., 1913, lx, 2611.

thirty hours. The temperature often reaches normal and will remain nearly normal in the majority of the cases; in others, especially when complicated with severe tonsillar and faucial exudate, associated with inflamed cervical glands, the temperature may rise again for a few days, but rarely to the same height as at the time of injection. Other results, which are quite as striking, can be seen in the early fading of the rash, the improvement in the circulation and the character of pulse, the general condition and mental symptoms. The delirium will frequently disappear, and the clinical eye detect that general improvement, which is so difficult to interpret by a mere temperature, pulse, and respiration record.

2. In the second group are included the later septic cases, seen from the fifth to the eighth day of disease. The rash may have faded entirely, but the membranous exudate over the fauces and tonsils is severe and extensive, and often appears necrotic. The cervical lymph glands are enlarged and tender. The temperature is high and septic in character, varying between 103 and 105 F. The pulse is proportionately small and rapid. A diffuse duskiness is often noticeable over the entire body surface. Pulmonary symptoms may or may not be present. The ears are frequently discharging.

In this group of cases, we would strongly recommend the use of fresh normal blood, which can be readily obtained from one or both of the parents, or some other close relative of the patient. The intramuscular injection of 4 ounces of blood in children up to the age of 4 years, of from 6 to 8 ounces of blood in older children and adults will give most satisfactory results. These blood injections may have to be repeated once or twice at intervals of four or five days. Such repeated injections are made in the same muscles, since the blood is absorbed with great facility. Not much specific effect is claimed for these injections of fresh normal blood; but the nutritive and stimulating properties and normal antibody content of relatively large amounts of normal blood have shown definite beneficial results in some desperately ill patients, and have convinced us that the treatment in septic cases when the prognosis is doubtful or poor should invariably include the administration of such a harmless and yet frequently efficient remedy.

The method of obtaining the blood, and its injection, is very simple: with a 1 ounce (30 c.c.) record syringe, a Lüer syringe or, in an emergency, an easy-working large syringe, and a medium-sized needle (preferably a No. 17 or No. 18 gage platinum iridium needle) the necessary quantity of blood is rapidly aspirated from the median cephalic vein of the donor at the bend of the elbow, and immediately citrated by adding the blood to a 10 per cent. solution of sodium citrate in the proportion of 1 ounce of blood to each cubic centimeter of the citrate solution. This makes the final dilution of the citrate 0.33 per cent. The needle inserted into the vein of the donor should not be removed; the syringe is detached when full, while an assistant carefully fixes the hub of the needle and attaches a 5 c.c. record syringe containing some 1 per cent. sodium citrate solution to keep the needle free of blood. Three or four syringefuls of blood may thus be obtained, before it is necessary to rinse out the larger syringe with a 1 per cent. solution of citrate which is kept ready in a beaker. We prefer to collect the blood in 100 c.c. bottles, each of which contains 2 c.c. of the 10 per cent. citrate solution. To each bottle 2 ounces of blood are added, the bottle being shaken after each addition to distribute the sodium citrate solution. In less than ten minutes, the required amount of blood (from 4 to 10 ounces) is obtained and is then ready for injection into the patient.

The blood is injected into the following regions: triceps, outer regions of both thighs (vastus externus), the calves (soleus) and both gluteal regions. In young children, half an ounce; in older children and adults, 1 ounce is injected into each of these muscles.

The blood serum is rapidly absorbed, as shown by the soft and supple condition of the muscles on the following day, when they will be found to have regained their former size and consistence. Subcutaneous injections of blood are not taken care of so readily as intramuscular injections and lead to extensive discoloration of the skin. We have noted once or twice a painful swelling of some of the injected muscles, which appeared at the end of ten days. This swelling rapidly subsided without any local treatment.

Twenty-three patients were treated at the Willard Parker Hospital with intramuscular injections of blood. They represent the cases with the poorest prognosis selected out of a total of some nine hundred admissions. Fifteen were treated with convalescent blood, which was citrated in a majority of cases. Nine received pooled blood from two or more donors. The amount injected varied from 2½ to 8 ounces. Of the 15 patients, 4 died; of these (*a*) one died from septic bronchopneumonia two days after the injection; (*b*) one died of a streptococcus sepsis nine days after the injection; (*c*) one was moribund when injected intravenously; he seemed to rally slightly, but the treatment was evidently given at a time when the patient's nervous system was entirely overwhelmed by the toxemia; (*d*) the fourth patient, practically moribund at time of injection, had severe meningismus with a marked retraction of the head; he died thirty-six hours after injection. Of the eleven patients who recovered, only five were of the purely toxic type; the remaining six patients had additional severe septic complications, especially tonsillar and faucial exudates, and inflamed cervical glands. The five purely toxic cases showed a critical drop in temperature which varied from 3 to 6 F., after which the temperature remained normal or slightly above normal. In the remaining six cases, the drop in temperature was less marked and was followed by a secondary rise which persisted for a number of days. These secondary temperatures were evidently due to the septic complications.

Eight patients received fresh normal blood: of this group, none died. These cases were far advanced septic cases, several with a poor prognosis. The blood, which was readily obtained from one or both of the parents, was citrated in six. One of the patients received two injections of 6 ounces each; another three injections, each 8 ounces, at intervals of four or five days. As was to be expected, no striking critical drop, but a distinct lowering of the temperature curve was noted, associated with an improvement in the septic complications and the general condition of the patient. The good results in some of these cases are the best proof of the beneficial effect that can be derived from this treatment.

While it is difficult to make any absolute statement or arrive at definite deductions from such a small series of cases, one can only hope that, by continuing

this form of treatment, a larger series of cases may finally be collected that will serve as a more definite guide for the value of the intramuscular injections of convalescent and normal blood. The treatment is easily carried out, is quite harmless, and is within the reach of the general practitioner. The beneficial effects noted in the above group of very severe cases were quite distinct. The rational element in the use of convalescent blood is apparent, so long as the etiology of scarlet fever is not known, and the use of antistreptococcus serum during the past ten years has not given the striking results that were expected from it after the early trials. The rational element in the use of fresh normal blood in the septic cases is found, first of all, in clinical observations of its great empiric value; but also to a large extent, in a consideration of the great nutritive value of homologous blood, its marked stimulating properties, and its well-known antibody content, which exerts a distinct bactericidal effect on many pathogenic organisms.

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PANTOPON.—Pantopium Hydrochloricum.—A mixture of the hydrochlorides of the alkaloids of opium in the proportion in which they exist in Smyrna opium, containing 50 per cent. of anhydrous morphine hydrochloride.

Actions and Uses.—Pantopon (pantopium hydrochloricum) produces essentially the effects of opium, but, being devoid of its extractives, it may be used for hypodermic administration. It is probably absorbed rather more promptly, and is free from the nauseant odor and taste of the ordinary opium preparations. It is used in the same conditions as those in which opium is indicated.

Dosage.—For adults, 0.005 to 0.02 Gm. (1/12 to 1/3 grain) hypodermically or by mouth. One grain of pantopon (pantopium hydrochloricum) is equivalent to:

2½ grains of extract of opium, U. S. P.
4 grains of powdered opium, U. S. P.
45 minims of tincture of opium, U. S. P.

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (The Hoffmann-LaRoche Chemical Works, New York). U. S. patent No. 1,056,219 (March 18, 1913; expires 1930). U. S. trade-mark No. 77,371.

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If a few drops of ammonia water be added to an aqueous solution of pantopon (pantopium hydrochloricum) (1:200) a precipitate of the secondary opium alkaloids should form at once (distinction from pure *morphine hydrochloride*).

If from 0.5 Gm. to 1 Gm. of pantopon (pantopium hydrochloricum) be weighed and dried at 100 C. to constant weight, the loss should correspond to from 9 to 9.5 per cent. of the weight taken.

If from 0.5 Gm. to 1 Gm. of pantopon (pantopium hydrochloricum) be weighed, dissolved in water containing a little nitric acid, the hydrochloric acid determined by precipitation with silver nitrate and weighing the precipitate in the usual way, the silver chlorid found should correspond to between 9.8 per cent. and 10.2 per cent. of hydrochloric acid (HCl).

If 0.8 Gm. of pantopon (pantopium hydrochloricum) be dissolved in sufficient water to make 40 Gm. of solution, 2 Gm. of normal ammonia water added, the solutions mixed by circulatory rotation (not by shaking), the solution immediately filtered through a dry filter, and 36.75 Gm. of the filtrate (equivalent to 0.7 Gm. of pantopon (pantopium hydrochloricum) be treated with 10 c.c. of ether and 4 c.c. of normal ammonia water and the assay process completed as described in the Swiss Pharmacopeia, Ed. 4, p. 344, for opium, the tenth-normal hydrochloric acid consumed should correspond to from 47 per cent. to 48 per cent. of anhydrous morphine.

LAROSAN Roche.—Stoeltzner's Casein Calcium.—Calcium caseinate containing calcium equivalent to 2.5 per cent. calcium oxide.

Actions and Uses.—The diarrheal diseases of infancy are now generally treated by dietetic measures. A useful food is that made from the curd of milk and diluted buttermilk, the resultant mixture containing a moderate amount of fat, a small amount of sugar and a large amount of protein (casein) and salts, particularly salts of calcium. Such a mixture being difficult to prepare in a private home, Larosan Roche is offered as a substitute.

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (The Hoffmann-LaRoche Chemical Works, New York City). U. S. patent No. 1,087,315 (February, 1914; expires 1931).

Larosan Roche is prepared by treating a suspension of casein in water with calcium hydroxide in such quantities as to yield a solution neutral to phenolphthalein and then evaporating to dryness in a special apparatus.

It is a light, white, practically odorless and tasteless powder, soluble in water, yielding a slightly opalescent solution, and neutral to phenolphthalein.

If incinerated, it emits an odor characteristic of burning protein and leaves a residue of calcium oxide which should weigh 2.5 per cent. of the amount of material taken.

It is incompatible with acids.

BETANAPHTHOL BENZOATE (See N. N. R., 1915, p. 210). The following non-proprietary preparation has been accepted:

Betanaphthol Benzoate, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York City). No U. S. patent or trade-mark.

Adjustment to Environment as a Condition of Mental Health.—Milton A. Harrington, writing on "The Psychic Factors in Mental Disorder" (*Am. Jour. Insan.*, April, 1915), bases a theory of mental disease on McDougall's work on social psychology. Mental disorder, according to Harrington's concept, is simply a failure to adjust oneself to environment. This may be due to causes within the individual—to the possession of exceptionally powerful impulses or exceptionally poor inhibitory powers, to defective education or to the presence of some physical disorder which interferes with proper mental functioning. Or, on the other hand, this lack of adjustment may be due to the environment itself, which imposes on the individual unnatural and unhealthful conditions. Such conditions of strain and tension, tending to break down a mental equilibrium which otherwise might have remained undisturbed, may occur in a strongly sexed individual whose instincts are denied physiologic outlet and whose circumstances or mental powers do not permit the employment of substitute outlets, as in business, literature or philanthropic work. Harrington suggests that, from this point of view, the problem of mental disorder is not hopeless, although the hope lies in prevention rather than in cure. Preventive measures must be used both on the individual and on the environment. On the one hand, hopeless defectives must be prevented from reproducing their kind, and normal persons must be given an education which will enable them to react satisfactorily to their environment. On the other hand, the environment must be studied and, if necessary, modified so that it does not unduly tax the individual's capacity for adjustment.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

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SATURDAY, SEPTEMBER 4, 1915

WOUNDS AND HYDROGEN PEROXID

An unusually large number of wounds infected with gas-forming micro-organisms have been observed in the present war. In the treatment of these injuries, ordinarily involving deep-seated lacerations, the use of solutions of hydrogen peroxid is reported to be decidedly beneficial. Despite these positive assurances, it is not easy to defend any tenable theory of the action of the peroxid. Of course, one thinks first of all of the oxygen which is readily liberated from the peroxid in wounds. Oxygen, especially in a nascent form, may have a pronounced chemical effect and bring about oxidation in suitable material. It has been assumed that inasmuch as the gas-forming bacilli are anaerobic in their habits, an atmosphere containing liberated oxygen might inhibit their development in wounds and in the depths of injured tissues. But the persistence of oxygen for any length of time in the midst of tissue clefts is highly problematic; and to this may be added the fact that even many anaerobic organisms are not destroyed or even completely inhibited in the presence of a considerable percentage of oxygen. The bacillus of malignant edema and the organism of tetanus continue to grow in the presence of atmospheres containing small percentages of oxygen. So far as the chemical action of the peroxid, as such, is possibly concerned, it must be recalled that the tissues are rich in the enzyme catalase, which promptly tends to liberate the oxygen and thus change the composition of the original product to an inert residue.

Spiro[1] of Strassburg, who has studied the recent treatment of the wounded in one of the base hospitals, ventures a physical, rather than chemical, explanation of the beneficent action of hydrogen peroxid. Recalling the familiar frothing of the substance when brought into contact with animal tissues, he suggests that the minute bubbles of gas formed serve to expose and open the spaces and pores of the tissues attacked. Larger surfaces are thereby exposed. The disinfectant power of the peroxid solution as such is doubtless small, but the effervescence has a pronounced cleansing action on the wounds, forcing out organisms and particles of destroyed tissue to the surface. The decomposition of the tissues is in this way retarded, and the bacteria are brought into locations where the exposure to the air helps to destroy them in the natural way or through the subsequent use of surface antiseptics.

In this connection, the use of sugar spread on wounds may be considered. This technic also has found some support in the treatment of infected injured areas. It is scarcely likely that products of the fermentation of sugar — organic acids, for example — are responsible for the favorable results. More likely is the explanation ventured by Spiro, based on the usual presence of more than one bacterial variety in an open wound. It is now well known that carbohydrates may alter the preponderance of specific varieties of micro-organisms in certain mediums, just as they are believed to decrease the putrefactive groups by facilitating the growth of the antagonistic acidophil types in the alimentary tract. We may likewise suppose that, in wounds, the presence of readily available carbohydrate in the form of sugar determines the preponderance of less objectionable forms of bacterial invaders.

1. Spiro, K.: Die Wirkung von Wasserstoffsuperoxyd und von Zucker auf die Anaerobien, München. med. Wchnschr., 1915, No. 15, p. 497.

THE METABOLISM IN EXPERIMENTAL DIABETES

In considering the source of the sugar which is excreted in the urine during diabetes, two theories seem plausible. One postulates an overproduction of sugar by the diabetic organism, owing to a lack of some normal control exerted on protein and fat metabolism. The formation of sugar would far exceed the limits of use for this carbohydrate, and a portion of it would be wasted in the resultant glycosuria. The other theory assumes that the tissues experience a loss of power to use sugar. These may be referred to as the overproduction and nonutilization theories, respectively.

The explanation of overproduction held sway for some time, but at present the available experimental facts speak quite clearly for nonutilization. Much of the evidence on either side is based on a determination of the respiratory quotient, that is, the relation of carbon dioxid production to the simultaneous oxygen consumption. When sugar is burned, the respiratory quotient $\frac{CO_2}{O_2}$, is unity; in the combustion of the other foodstuffs it is decidedly lower.

The extensive observations of Benedict and Joslin[1] on human diabetes show that the severity of the disease increases with the lowering of the respiratory quotient. This situation in the respiratory exchange indicates a loss or an impairment of the power of sugar utilization. Other facts are in correspondence

1. Benedict, F. G., and Joslin, E. P.: Publications of the Carnegie Institution of Washington, 1910, No. 136; 1912, No. 176.

with this, notably the often repeated observation of the recovery of administered sugar in diabetics.

The chief dependence must be placed on experiments with animals, in which the conditions can be adjusted to meet the questions at issue. The removal of the pancreas in dogs produces symptoms in many respects similar to a severe type of human diabetes; hence the reliance which has been placed on such experiments. The latest research in this field, conducted at the Institute of Physiology in University College, London,[2] has aimed to attack the question of sugar usage in diabetes by comparing the metabolism of dogs before and after depancreatization. In harmony with earlier experiences, a definite increase of total metabolism, corresponding with the severity of the usual symptoms, was shown. On the average, it amounted to from 15 to 20 per cent. There was the well-known increase in protein breakdown, a destruction out of all proportion to the actual part taken by protein in the oxidations of the organism. By themselves, these facts cannot be used as a deciding argument in favor of either the overproduction or nonutilization theory of diabetes. The chief argument in favor of the latter, however, was the recurrence of the generally low level of the respiratory quotient in diabetes. Finally, the rise of the respiratory quotient which normally occurs after the administration of sugar was once more found to be greatly diminished or absent after the total removal of the pancreas, indicating that complete oxidation of sugar does not occur under these circumstances. The disturbance in the carbohydrate metabolism thus appears to represent a loss of the power of oxidizing glucose.

THE PROBLEM OF TERMINAL DISINFECTION

In seeking suitable means of defense against epidemic diseases, the practices of sanitarians have been modified from time to time in accord with the dictates of the newest contributions of the science of hygiene. The development of the art of disinfection, so as to render infectious or contagious matter innocuous, promptly led to a widespread employment of procedures intended to accomplish the desired result. Fumigation is probably the most familiar of all the methods which have received extensive recognition, though it is by no means the only one or even always the most efficient process. Heat and antiseptic solutions have likewise found an extensive field of usefulness, particularly when the disinfection is intended to be applied in a restricted area or to smaller articles or surfaces.

A few years ago, terminal disinfection was the recognized routine after the more common infectious diseases, such as diphtheria, scarlet fever and tuberculosis. Within the past decade there has been a growing tendency in many quarters to abandon terminal disinfection. To understand this change of attitude it must be remembered that there is, in some degree, a natural process of disinfection going on in the environment of disease. Drying, exposure to sunlight, and other agencies are potent factors in bringing about the destruction of infection by processes of nature. Their efficiency increases in direct proportion to the length of time and the degree to which they are permitted to act. Chapin[1] was among the first to advocate partial abandonment of terminal disinfection in certain diseases, such as diphtheria and scarlet fever, in the belief that "the conditions which surround organisms that have been discharged from the patient's body are unfavorable for their multiplication and that the decrease of the organisms, brought about by the processes of nature, is sufficient to reduce the number of remaining organisms to a negligible quantity."

The discontinuance of terminal disinfection has been justified in the eyes of its advocates by the statistics of the incidence of infectious diseases where the comparisons have been instituted. In 1912, the New York City health department abandoned terminal disinfection after diphtheria, except that bedding and like goods were removed to steam disinfecting plants. This rule, however, did not apply to cases which ended fatally, or were terminated by removal to hospital or other quarters; in these cases terminal disinfection was done. At a later date the removal of bedding, etc., was discontinued. Likewise, terminal disinfection after measles, German measles and whooping cough was abandoned, and also after poliomyelitis and cerebrospinal meningitis, except after fatal or removed cases.[2]

Despite the seemingly satisfactory outcome of the omission of terminal disinfection in many places, the wisdom of this course is being seriously debated. It is true that the statistics show no serious increase in the spread of disease in the cases in which they have been studied. Nevertheless, at the last annual conference of State and Provincial Boards of Health of North America, Hasseltine,[3] of the U. S. Public Health Service, seriously questioned the wisdom of the abandonment of terminal disinfection after certain diseases. He makes a plea for more knowledge on the subject before any measure long believed to be efficacious is discarded; and he insists that the point at which natural disinfection becomes sufficiently nearly complete to warrant the discontinuance of terminal disinfection should be determined under more exact conditions than have been obtained in the past.

Of course, it is generally agreed that when unusual circumstances arise, when some rare or peculiarly objectionable disease like cholera makes its appearance, every possible opportunity of destroying even a small

2. Moorhouse, V. H.; Patterson, S. W., and Stephenson, M.: A Study of the Metabolism in Experimental Diabetes, Biochem. Jour., 1915, ix, 171.

1. Chapin, C. V.: The Sources and Modes of Infection. New York, John Wiley & Sons, 1912.
2. These statements are taken from Pub. Health Rep., 1915, xxx, 2049.
3. Hasseltine, H. E.: The Practical Use of Disinfectants, Pub. Health Rep., July 9, 1915, p. 2049.

amount of infection should be embraced. We doubt whether those who abandon terminal disinfection would claim that the results are ideal. Even if it is true that they are quite as good as under the older system, it may well be asked whether the latter failed because it was useless or because it was not properly carried out. Hasseltine remarks that possibly the disinfection of the past, when done, did not always disinfect. The conduct of such an operation is not a tyro's job. It has been suggested that the abandonment of official disinfection will induce people to do more cleaning themselves. But Rosenau says, "If terminal disinfection prevents the occurrence of only a small number of cases, it would still seem to be worth while."[4] We have no desire to take sides in the issue that has been raised; but the discontinuance of any method of disinfection on the ground that it is useless should be based on substantial evidence.

THE SO-CALLED NEW ANTISEPTIC

Recently the newspapers have contained announcements of a new antiseptic or germicide that has proved, or is to prove, of great value in the treatment of the wounded in the present war. Credit for its discovery is given to Drs. Carrel and Dakin.

The antiseptic referred to is that which Dr. Dakin[5] of the Herter Laboratory, New York — now serving as bacteriologist in a war hospital at Compiègne in France — announced in a paper read before the Académie des sciences in Paris. It is made by the well-known process of adding sodium carbonate to a solution of chlorinated lime. The mixture is thoroughly shaken, and after half an hour the liquid is siphoned off from the precipitate of calcium carbonate and filtered through cotton. To this clear liquid, sufficient boric acid is added to make the preparation neutral or acid, the amount required being determined by titration with phenolphthalein. Such a solution was found to kill staphylococci in two hours.

According to the *British Medical Journal*,[6] about a year ago Professor Cohen, of the University of Leeds, England, entered into communication with Dr. Dakin, a former student, regarding research on antiseptics for surgical use. The arrangement was that the substances elaborated by Professor Cohen should be tested bacteriologically by Dr. Dakin, and that the most promising should be tried clinically by Dr. Carrel.

At about the same time, under the auspices of an English medical research committee, a similar research by Prof. Lorrain Smith, with the assistance of Professor Drennan of the University of Otago, N. Z., Dr. Rettie, a chemical expert, and Lieutenant W. Campbell of the British army medical corps, was undertaken in the University of Edinburgh. Their results were reported in the *British Medical Journal*.[7] The substance which they prepared was made by rubbing up chlorinated lime to a fine powder and mixing it with an equal weight of powdered boric acid. The ideal antiseptic for the field, they concluded, was a dry powder to be applied direct, which, it was believed, has advantage over a solution because it is more portable, and water is often not procurable.

Chlorinated lime, the basis of the so-called new antiseptic preparation, is well known as a powerful disinfectant. Its alkalinity, however, makes it destructive to living tissues except in dilute solution. The same may be said of solution of chlorinated potash (Javelle water), which has been largely used by French surgeons in the present war, and of solution of chlorinated soda (Labarraque's solution.) The advantage claimed for the new mixture is that the preparation, being practically neutral and unirritating to the tissues, may be applied in greater strength than that in which it is possible to use chlorinated lime, Javelle water or Labarraque's solution. Experiments indicate also that the germicidal activity of chlorinated lime is increased by such treatment of the calcium hypochlorite as has been described. Such increase in germicidal activity is generally attributed to the liberation of hypochlorous acid. It has been found that the activity of ordinary bleaching powder is greatly increased by passing through it carbonic acid gas. Any other acid, as boric acid, will do as well. From the chemical point of view, therefore, there is nothing new in this method. That the practical application of such a mixture is not wholly new is proved by an earlier article published by Vincent.[8] He suggested the application to ulcerating and gangrenous wounds of a mixture of chlorinated lime and boric acid.

THE SCHMIDT NUCLEAR TEST FOR PANCREATIC FUNCTION

Abundant illustrations of the failure of so-called functional tests of the activity of various organs of the body to meet requirements occur in medical literature. Many of these procedures have been reviewed critically in THE JOURNAL from time to time, and their shortcomings noted. Among the functional tests which have attracted particular attention in the past decade is the so-called "Kernprobe" or nuclear test for certain types of pancreatic disease. The pathologic disturbances of the pancreas can at best be diagnosed with difficulty, owing to the location and other peculiarities of this organ. On that account, it is all the more important to find reliable indexes of the ability or incapacity of the gland to perform its work.

The nuclear test was proposed by Adolf Schmidt, now chief of the University Clinic at Halle, Germany. It depends on the assumption that the preliminary

4. Rosenau, M. J.: Preventive Medicine and Hygiene, New York, Daniel Appleton & Co., 1913.
5. Dakin: Presse méd. (society proceedings), Aug. 5, 1915.
6. Research in Antiseptics, Brit. Med. Jour., Aug. 14, 1915, p. 261.
7. Brit. Med. Jour., July 24, 1915, p. 129; abstr., THE JOURNAL A. M. A., Aug. 21, 1915, p. 744.
8. Vincent: Presse méd., 1914, xxii, No. 70; abstr., THE JOURNAL A. M. A., Nov. 28, 1914, p. 1986.

stages in the digestion of cell nuclei or nuclear material are dependent on enzymes furnished in the pancreatic secretion. Accordingly, if this is entirely in abeyance, the nuclei of animal tissues like muscle will remain undigested and can subsequently be detected by microscopic examination of the feces. Although the presence of nuclei of the ingested food would therefore point to complete lack of pancreatic flow, the absence of nuclei need not signify the converse, that is, the existence of an unimpaired function; for even a small amount of pancreatic juice might suffice for digestive purposes in the individual cases.

The test here outlined in respect to its underlying principles has received various modifications for application in the clinic of digestive disturbances. Schmidt's clinical form of the test consists in feeding small pellets of muscle tissue enclosed in silk bags. The tissue residue is recovered from the stools, sectioned, stained and examined for nuclei. Some have advocated the use of material with stained nuclei deriyed from thymus. These details are of secondary importance in relation to the underlying assumption that ordinarily pancreatic juice alone will dissolve the nuclei—an assumption on the truth of which the worth of the test must depend or fail.

The Schmidt nuclear test has not lacked critics who have attributed some digestive power on nuclear tissue to intestinal and even gastric juice, not to mention bacterial agencies. At the Johns Hopkins Hospital it has been possible to apply a crucial test, so to speak, to the problem involved by making observations on a patient known to have a complete absence of pancreatic secretion in the intestinal tract. Atchley[9] added thymus gland, one of the tissues richest in nucleoprotein, to the food of the patient, and estimated the urinary output of uric acid. Inasmuch as the metabolism of the purins derived from the digestion of nucleoproteins leads to a prompt increase in the production of uric acid which is readily demonstrated in a healthy subject, this factor can be used to ascertain whether the nuclear tissue has been digested and the purins have been made available in the gastro-intestinal tract. That this conversion actually occurred in the absence of both bile and pancreatic juice in Atchley's patient was attested by the marked rise in uric acid excretion following the ingestion of 150 grams of thymus as a supplement to a purin-free diet. The exogenous output of uric acid exceeded the endogenous level by more than half a gram. This demonstration of the digestion of thymus nuclei with the production of uric acid independently of the pancreatic secretion, together with a negative result of the Schmidt test in the same case and in many others reported, "definitely points out the worthlessness of the Schmidt nuclear test for pancreatic function."

9. Atchley, D. W.: Nuclear Digestion and Uric Acid Excretion in a Case of Total Occlusion of the Pancreatic Duct, Arch. Int. Med., May, 1915, p. 654.

SALICYLATES, URIC ACID AND GOUT

The desirability of detailed information regarding the drugs which enter most commonly into the therapeutic equipment of the practitioner of medicine is manifest. Salicylates belong in this category. They are employed widely—perhaps not always wisely—especially as "specifics" in acute inflammatory rheumatism or acute arthritis. Salts of salicylic acid form the essential ingredient of many of the secret remedies for these conditions. It has long been known that salicylates will provoke a significant increase in the output of uric acid. According to Rockwood's experiments[1] on man, this effect is confined to the ortho-hydroxybenzoic acid (salicylic acid), and is not obtained by the isomeric parahydroxybenzoic and metahydroxybenzoic acids.

Another chemical substance which, only recently, has come into prominence in therapy, and which likewise induces an increased output of uric acid in man, is phenylquinolin carboxylic acid, sold under the name of atophan. Various American investigators have demonstrated that this effect is accompanied by a commensurately lowered concentration of uric acid in the blood.[2] From this the conclusion was drawn that atophan induces some change in the permeability of the kidneys for uric acid, establishing for this metabolic product a lower level of renal retention, as the result of which there ensues an overflow of uric acid from the blood and tissues into the urine.

Naturally, one asks whether the increased amount of uric acid eliminated under the influence of salicylic acid finds a similar explanation pointing to changes in the renal permeability. New studies by Fine and Chace[3] at the New York Post-Graduate Medical School indicate a close resemblance between atophan and salicylates in this respect. In several instances, the effect of the latter drug was, if anything, even more marked than that of atophan, and caused an almost complete disappearance of uric acid from the blood. No such results were obtained with maximum doses of colchicum, which still enjoys some reputation as a drug in rheumatic affections; nor was quinin hydrochlorid or theobromin sodium salicylate effective in reducing the uric acid concentration of the blood.

Although to the parallelism between atophan and salicylates as analgesics and uric acid eliminants is now added a similarity in their behavior toward the kidney, in so far as this is attested by the lowered concentration of uric acid in the blood, the relation of this factor to attacks of gout is far from solved. Many facts on record, dating from the original con-

1. Rockwood, E. W.: The Influence of the Isomers of Salicylic Acid on Metabolism, Am. Jour. Physiol., 1909-1910, xxv, 34.
2. Fine, M. S., and Chace, A. F.: Jour. Pharmacol. and Exper. Therap., 1914, vi, 219. This gives recent data and the literature on the subject.
3. Fine, M. S., and Chace, A. F.: The Influence of Salicylates upon the Uric Acid Concentration of the Blood, Jour. Biol. Chem., 1915, xxi, 371. Frank, E., and Pietrulla, G.: Arch. exper. Path. u. Pharmakol., 1914, lxxvii, 361.

tentions of Garrod,[4] have suggested a validity for the hypothesis that the attacks are due to increase of the uric acid content of the blood above its saturation point as the result of the inability of the kidneys to excrete the product satisfactorily. With the newer methods of blood analysis, numerous instances have been described in which an increase in the uric acid content of the blood has actually been found. Doubt is again raised, however, by the latest contribution of Daniels and McCrudden[5] on the possible relation of uric acid to typical gouty attacks. They have found in two carefully selected cases of real gout—not atrophic or hypertrophic or infectious arthritis—that theory and fact are not yet in harmony in every instance. There was no more uric acid in the blood of these gouty subjects than in the blood of normal individuals. The concentration in the blood was not altered during attacks of gout, nor was the excretion of uric acid changed during these paroxysms. More anomalous, further, is the fact that attacks of gout came on even when the uric acid content of the blood was greatly lowered during atophan administration, as shown by chemical analysis. When competent investigators thus differ, something remains to be discovered.

Current Comment

A DEBATED FACTOR IN THE METABOLISM OF CHILDREN

Several years ago, W. C. Rose pointed out the constant occurrence of creatin in the urine of children until about the age of puberty. The statement was verified later by Folin and others. Creatinin is, of course, a constantly present constituent of human urine; creatin, a compound very closely related to it, is rarely found as an excretory product of the metabolism except under what may be regarded as abnormal or unusual conditions. Creatin arises in the urine of adults in various forms of carbohydrate starvation; it is present in the renal secretion in severe forms of diabetes, and can readily be induced to appear in the urine of normal man by withholding carbohydrates from the diet. With the replacement of the latter, the creatinuria disappears. Procedures which deplete the store of glycogen in the body are likely to provoke the appearance of creatin in the urine along with creatinin. The estimation of creatin in urine is subject to errors of method which have been discussed in relation to the reported appearance of this constituent in the excretion of children. More significant is the intimation, however, that creatin actually occurs in their urine,[6] but is due to a deficiency of carbohydrate in the diet of childhood. Taylor,[7] of the University of Pennsylvania, has made an experimental investigation of these criticisms under conditions in which they were presumed to be controlled or excluded. He found that creatinuria persists in the child in spite of high intakes of carbohydrate, and insists that there is a partition of creatin-creatinin in the urine of children "naturally and reasonably to be ascribed to incomplete conversion of creatin into creatinin." The absolute figures for the sum of these two constituents compare approximately with those noted in adults when the weights of the children and the probable masses of muscular tissue are considered. This corresponds with Shaffer's postulate of the relation of urinary creatinin to the mass of muscle substance in the adult.

THE LIVER AND UREA FORMATION

Recent physiology has clearly established two facts of importance in the metabolism of the nitrogenous compounds. One is that the amino-acids resulting from the digestion of proteins in the gastro-intestinal tract are probably absorbed, without undergoing any change, through the intestinal wall, and are distributed by the blood stream to the various tissues of the body. The second fact is the demonstration of the widespread distribution of urea, the end-product of protein metabolism, in diverse parts of the organism.[1] The thoughtful person is accordingly led to inquire how and where the conversion of amino-acid to urea is accomplished. The chemical metamorphosis of nitrogenous compounds which ends in the production of urea requires little time for its completion. Since the classic experiments of von Schroeder in 1882, it has been taught that the liver takes a prominent, or even preeminent part in the function of urea formation. Lately, however, the special predominance of the liver in this connection has been called into question by American investigators. The details of the controversy, involving the question of technic and the validity of certain experimental methods, will scarcely interest our readers. The newest feature worthy of notice here has been contributed by Dr. B. C. P. Jansen[2] of the University of Amsterdam in Holland. He has rescued the liver from its enforced oblivion in relation to the metabolism of amino-acids by demonstrating, in perfusion experiments on the surviving extirpated organ, that it can, after all, play an important part in the formation of urea from these nitrogenous precursors. Good experimental methods can usually be depended on to bring results.

COMPOSITION OF THE PITUITARY BODY

The increasing use of extracts of pituitary glands or of products prepared from them makes it more than desirable to obtain detailed information regarding the composition of these important structures. In the case of other so-called glands of internal secretion, it will be recalled that distinct seasonal variations have been found to exist in respect to the assumed active con-

4. Garrod, A.: The Nature and Treatment of Gout and Rheumatic Gout, London, 1859.
5. Daniels, Amy L., and McCrudden, F. H.: The Relation of Uric Acid to Gouty Attacks, Arch. Int. Med., June, 1915, p. 1046.
6. For evidence of the identity of the creatin, see also Morris, J. L.: Creatine and Creatinine Determinations: The Identity of Creatine, Jour. Biol. Chem., 1915, xxi, 201.
7. Taylor, A. E.: On Creatinuria, Jour. Biol. Chem., 1915, xxi, 663.

1. The Distribution of Urea in the Body, editorial, The Journal A. M. A., Sept. 26, 1914, p. 1115.
2. Jansen, B. C. P.: The Function of the Liver in Urea Formation from Amino-Acids, Jour. Biol. Chem., 1915, xxi, 557.

stituent.[1] Large numbers of pituitary glands have been collected in one of the manufacturing plants for organotherapeutic preparations, at the height of the outdoor season, and likewise during the coldest period of the year.[2] These extremes of summer and winter months might be expected to disclose any detectable or important seasonal differences if they exist. The physiologic activity of the different preparations was carefully compared by the isolated uterus method described by Roth.[3] This sensitive standardization procedure showed that no distinct seasonal variation exists in either chemical composition or physiologic activity of the posterior lobe of the pituitary body from cattle. It was further ascertained that the strength seems to be the same both in cattle (herbivora) and in hogs (omnivora). The posterior lobe of the gland of the hog is twice as large in proportion to the weight of the entire pituitary as that in cattle. Approximately 10 per cent. of the beef glands contain colloid masses secreted between the anterior and posterior lobes. This material, however, does not exhibit any pronounced uterus contracting power. Facts like the foregoing ought to render the standardization of pituitary products more easy than in the case of raw glandular material subject to conspicuous changes of composition from month to month.

1. Seasonal Variation in Composition of Thyroid Gland, editorial, THE JOURNAL A. M. A., Jan. 9, 1915, p. 155.
2. Fenger, F.: On the Composition and Physiological Activity of the Pituitary Body, Jour. Biol. Chem., 1915, xxi, 283.
3. Roth, G. B.: Hyg. Lab. Bull. 100, U. S. P. H. S., 1914.

RESTRICTED PRACTICE FOR DRUGLESS PRACTITIONERS

Under the pretext that they were "not practicing medicine," so-called drugless practitioners have prevailed on the legislators of several states to pass laws granting them the privilege of obtaining licenses to treat the sick under educational standards that are lower than are required of physicians. In the majority of these states the law does not permit such practitioners to practice surgery or to prescribe drugs; they are supposed to limit their practice to the use of the method or system of treatment advocated by the particular cult to which they belong. This arrangement, in which the public interests are forgotten, if not deliberately set aside, is indefensible from every point of view. It is class legislation, since it provides unequal standards for different groups of practitioners of the healing art. The limitation of practice is dangerous, since those who undertake to treat the sick should be acquainted with all methods of treatment and be free to use the one which meets the immediate needs of the patient — to save his life, if it is an emergency case, the prompt administration of a drug may be essential. The arrangement is a serious handicap to those drugless practitioners who honestly comply with its provisions, and places a premium on law-breaking, deceit and pretense for those who disregard the restrictions. In short, this scheme of restricted practice provides a limitation which does not limit; it adds to the confusion already existing in the licensing of physicians; it defeats the purpose of the medical practice act, and betrays the public to the hordes of those who are not qualified by training to know whether a patient is sick or well, to differentiate between diseases, to select and apply the treatment most likely to result in a cure, or to take such measures as will prevent the spread of a contagious disease to others. The only way to correct the evils of this bad arrangement, and at the same time safeguard the public welfare, is to require every practitioner of the healing art to meet certain minimum educational qualifications by which it can be known that he has obtained a satisfactory training in the fundamental medical sciences. The interests of the public should not be pushed aside in order to favor any body of practitioners, by whatever name they may be called.

PEPSIN IN GASTRIC THERAPY

It is only a few years since pepsin was widely and freely prescribed in all sorts of gastric disorders. Today this custom is practically discontinued, and even the ubiquitous chewing gum no longer has its sales increased by the device of including the alleged presence of pepsin among its claims. The reason for this decline in the popularity of pepsin as a remedy in digestive disturbances is perhaps to be found in the fact that analyses of the gastric contents have revealed the constant presence of the digestive enzyme in all but the most exceptional cases of organic disease. Furthermore, the administration of pepsin alone rarely gives occasion to suspect that this form of medication produces any curative effects. Recent observations in the laboratories of the University of Chicago have indicated the enormous "factor of safety" which the human organism seems to possess in respect to the pepsin of the gastric secretion.[1] An adult normal person, if hungry, may secrete from 600 to 700 c.c. (20 to 23 ounces) of gastric juice on an average palatable dinner, or about 1,500 c.c. of gastric juice in twenty-four hours. Carlson[1] has found by actual experiment with the product of human secretion that 1 c.c. of the juice will readily digest 10 gm. (150 grains) of finely divided boiled egg-white in three hours. From such data it is easy to calculate that the normal human stomach secretes pepsin far in excess of the actual needs of the gastric digestion of proteins, or at any rate in excess of what is required under ordinary conditions. Carlson remarks that this great excess of pepsin in normal gastric juice probably explains the clinical finding of great reduction in pepsin content without any evidence of impaired gastric digestion, provided that sufficient acid is present.

1. Carlson, A. J.: Contributions to the Physiology of the Stomach, XXV, A Note on the Chemistry of Normal Human Gastric Juice, Am. Jour. Physiol., 1915, xxxviii, 248.

Contamination of Shellfish.—There is undisputed evidence to show that shellfish become contaminated when placed in sewage-polluted water, and that the colon bacillus and the typhoid bacillus will survive for variable lengths of time in the liquor and the body contents of such shellfish after their removal from infected water.—Dr. J. A. Shears, *Monthly Bull.*, New York City Department of Health.

Medical News

ILLINOIS

Diphtheria in DuQuoin.—On account of an epidemic of diphtheria in DuQuoin, the mayor has issued a proclamation forbidding children under 16 to attend picture shows, churches or public gatherings.

Crile in Jacksonville.—At the annual picnic of Cass and Morgan County medical societies, held at the farm of Dr. Carl E. Black, Jacksonville, in Cass County, Dr. George W. Crile, Cleveland, delivered an address on "The Goiter Question," and after the address, Dr. Crile gave his first-hand impressions of the European War.

Fair Abandoned on Account of Cattle Disease.—The Lake County Fair has been abandoned on account of the prevalence of foot and mouth disease. One hundred animals, the property of John Tulley, living east of Halfday, have been slaughtered, and a number of cows and hogs have been killed on other farms in the vicinity. Dr. O. E. Dyson, state veterinarian, is in charge of the situation.

Inspection of Maternity Hospitals.—The State Board of Administration has undertaken the task of the inspection of maternity hospitals and has been in conference with Dr. C. St. Clair Drake, secretary of the State Board of Health, regarding the fixing of standards for these institutions. After this has been arranged, a systematic inspection of institutions of this source will be undertaken.

Psychopathic Institute Instruction.—The superintendents of the state hospitals and the institutions for the feebleminded at Lincoln, have been directed by the State Board of Administration to take a course of instruction at the Psychopathic Institute, Kankakee. Dr. George A. Zeller, Springfield, alienist of the board, is arranging the details and is making the necessary schedule of instruction periods.

More Delay About Sanatorium.—The City Council of Rock Island on August 12, granted full authority to the sanatorium commission to receive bids and let contracts for the construction of the institution. On August 24 the sanatorium board met with the city commissioners at the mayor's office, and the city council by vote, defeated the recommendation of the board that the bid for the general construction work for the tuberculosis hospital, be accepted.

Personal.—Dr. George K. Harris, Vienna, has resigned as superintendent of the Chester State Hospital and Dr. Jerome L. Harrel, Norris City, has been appointed his successor. ——Dr. Frank A. Stubblefield, Jacksonville, for twelve years a member of the staff of the Jacksonville State Hospital, has been appointed medical director of the new Alton State Hospital.——Dr. Harry S. Seiwell, medical director of the Alton State Hospital, has been transferred at his own request to the Watertown State Hospital.——Dr. Hugh S. Schofield, Kankakee, was operated on August 20, in the Emergency Hospital, Kankakee, for appendicitis.——Dr. James Archibald, Breese, has started for Europe where he expects to work with the American Red Cross.——Dr. John W. Geiger, LaSalle, is convalescent after an operation for appendicitis.——Dr. J. N. Swan, Monmouth, has been appointed professor of chemistry in the University of Mississippi.

Chicago

Sanitary Inspectors in Police Stations.—Dr. John Dill Robertson, commissioner of health, has detailed a sanitary inspector to each of the more important police stations, with instructions to operate directly from these stations instead of from the city hall.

Progress of Negroes in Medicine.—On August 22, colored physicians from all parts of the country addressed audiences in the colored churches in Chicago on topics relative to public health and on the three following days clinics were held in Mercy, Cook County, Provident and St. Luke's hospitals, conducted by both white and colored physicians.

To Aid Consumptives.—An order relative to the admission of patients to the Municipal Tuberculosis Sanatorium, was promulgated August 21 by the chief of police, and at the same time small maps were sent to each police station showing the location of dispensaries maintained by the sanatorium in various parts of the city. These maps are to be posted conspicuously in the police stations and all persons making inquiries will be directed to the dispensary nearest the station where the inquirer will receive instruction how to gain admittance to the sanatorium.

INDIANA

Doubled Capacity of Open-Air School.—The board of school commissioners for Indianapolis has doubled the capacity of the open-air school for consumptive children. For the coming year accommodations will be provided for more than fifty children.

Disease Prevention Day.—The governor has issued a proclamation designating October 1 as disease prevention day throughout the state. He urges that exercises be held in the public schools on this day and that municipal, civic and other organizations cooperate to make the effort a success.

Personal.—Drs. Robert C. and Mason B. Light, Broad Ripple, Indianapolis, suffered several hundred dollars worth of damage from a fire at their office, recently.——Dr. General W. H. Kemper, Muncie, celebrated his fiftieth year of continuous practice of medicine, August 19, with a reception in the parlors of the Muncie Commercial Club.——Dr. Charles E. Phipps, Muncie, has been appointed physician at the National Soldiers' Home, Milwaukee.

IOWA

Money Saved for State.—According to figures compiled by Dr. Guilford H. Sumner, Des Moines, secretary of the State Board of Health, the state has been saved about $10,500 during the past year on the purchase of diphtheria antitoxin. The commercial value of the amount used in the state would have been about $15,000, whereas it cost the state about $4,500.

Personal.—Dr. Edgar B. Henderson, Marengo, who has been seriously ill, is reported to be improving and has gone away for a rest of a month. During Dr. Henderson's vacation, Dr. Ruby Helen Payne will have charge of his practice. ——Dr. Theodore W. Kemmerer, Davenport, has accepted the position of assistant professor of pathology and bacteriology in the University of Southern California, Los Angeles.—— Dr. Herbert W. Piper, Conroy, who was seriously injured by the overturning of his automobile near South Amana, August 12, is convalescent.——Dr. Jennie G. Ghrist, Ames, has been elected supreme medical examiner of the Royal Neighbors of America.

MASSACHUSETTS

Grateful for Aid from Boston.—Surgeons in France and Belgium have sent notes of thanks to the Emergency Relief Committee of the Women's Department of the New England Section of the National Civic Federation, for the 321,763 surgical dressings shipped abroad for use in French and Belgian hospitals since the outbreak of the war.

Work of Floating Hospital.—An appeal is made for financial assistance by the Boston Floating Hospital, a unique and serviceable charity, by the aid of which lives of hundreds of children have been saved during the heated months during the last twenty years. The hospital is supplied with a force of competent physicians and nurses and in addition to the life-saving work for children, mothers and elder sisters are instructed in the methods of home care and treatment, the benefits of bathing, fresh air, diet and personal hygiene. The expense of the hospital is from $40,000 to $50,000 a year and a generous response to the appeal is expected and hoped for.

MINNESOTA

Sustaining the Harrison Law.—In the United States District Court at Minneapolis Judge Page Morris has sustained the constitutionality of the Harrison Narcotic Law by overruling a demurrer to the indictment of Dr. Wenceslaus Hovorka of St. Paul. It was contended by the attorney for Dr. Hovorka that the law is unconstitutional in so far as congress attempts to regulate the sale of narcotic drugs within a state in that it is infringing on the police powers of the state.

Personal.—Drs. Joseph C. Michael, St. Paul; Edward J. Engberg, St. Paul; C. A. Hilberg and J. F. Hilberg have been appointed teaching assistants in the Medical College of the University of Minnesota, Minneapolis.——Dr. Joseph C. Michael has been appointed a teaching assistant in the department of nervous and mental diseases of the college and has been assigned to the St. Paul City and County Hospital.—— Dr. James F. Hammond, who left St. Paul, April 12, to join the British army medical corps, is now in active service in the Mediterranean.——Prof. Frederick J. Wulling, dean of the College of Pharmacy of the University of Minnesota, was recently elected president of the American Pharmaceutical Association at its annual meeting in San Francisco.

MONTANA

Personal.—Dr. Frederick W. McCrimmon, Butte, who was seriously injured in a collision between a motor car and a motorcycle, July 18, in which he sustained a fracture of the base of the skull, has improved sufficiently so that he has been removed from the Murray Hospital to his home.——Dr. Harry J. McGregor has opened the McGregor Hospital in the Givens Building, Chouteau.——Dr. Johannes B. Makkyla, Red Lodge, has gone to Europe to work with the Red Cross.

NEW YORK

Sanitary Survey of Syracuse.—Inspectors of the Bureau of Health are making a sanitary survey of Syracuse. This survey includes the inspection of back yards, barns and office buildings and the search for nuisances and unsanitary conditions.

Pharmacists Support Movement Against Fraudulent Patent Medicines.—Following the action of the Bronx County Pharmaceutical Association in endorsing the Department of Health's campaign against "patent medicines," the Westchester County Pharmaceutical Association recently passed resolutions to the same effect.

Course in Public Health.—The College of Medicine of Syracuse University, in order to render service to the state, and to comply with the resolution adopted by the Public Health Council, offers two courses in public health: 1, a six weeks' course in residence consisting of practical laboratory and field work with lectures and readings. This course will be given from April 24 to June 4, 1916, provided not less than fifty physicians register and 2, a correspondence course consisting of 330 hours of various kinds of instruction, the last week being spent in residence at Syracuse. Lectures, laboratory and field work and examinations will constitute the work of the final week. This course will continue from September 21, 1915, until June 10, 1916, providing not less than fifty physicians register. Application for the first course should be filed before April 1, 1916, and for the second course before September 15, 1915. On satisfactory completion of either course, a certificate will be issued. The tuition fee is $50.00 for each course, payable at the time of registration, and all applicants must be graduates in medicine. For further information and application blanks, application should be made to the Secretary of the College of Medicine, Syracuse University, 309 Orange Street, Syracuse.

New York City

Opium Found on Vessel.—Customs House officials recently found opium valued at $3,200 aboard the British freighter *Ardgaroch*, which has been lying at a dock in this city. Four Chinamen responsible for the consignment were placed under arrest.

Work of New York Diet Kitchen Association.—This organization, in a plea for funds to carry on its work, points out that in its eight milk stations it has cared for during the summer 3,035 babies and among these there have been only four deaths from diarrheal disease. This is a new record in the city's campaign to reduce infant mortality.

The Typhoid Epidemic on Hart's Island.—The number of cases of typhoid fever in the Boys' Reformatory and the branch workhouse on Hart's Island has now reached 80 since the first of August and there have been five deaths. The source of the epidemic has not been definitely settled but there is a theory gaining some credence that these epidemics which have been occurring annually may be traced to Potter's Field, which is located on this island, and where over 200,000 unclaimed bodies have been interred.

Health Program for New York City.—Dr. Haven Emerson outlined a health program for New York City. He suggests that the health commissioner's position be made permanent and notes ten matters of health in the city which require attention, namely: sewage disposal; use of alcohol; stricter traffic control; a passable standard for tenement houses; the elimination of mosquito and fly breeding premises; the instruction of the public in food values; physical examination once a year by a physician; the education of the public in hygiene and sanitation; the lodging of the sanitary and administrative control of tuberculosis in one department; and the necessity of notification and registration of communicable diseases.

New Course in Surgery.—New York University announces that it will give a course in surgery as a distinctly philosophic study rather than as a technical science in its graduate school work for the collegiate year beginning in September. The announcement states that the primary purpose of this course is to furnish physicians and medical students an opportunity to study the theory of surgery from the standpoint of its relation to broad biologic laws. It is hoped by this method to develop a broader type of medical practitioner and surgeon. Students enrolling in this course will be required to have obtained either the baccalaureate degree in arts, science, philosophy or letters, or the degree of doctor of medicine from a college of standing.

Unincorporated Public or Private Hospitals.—The Sanitary Code provides that no person, persons, or corporation, other than those specifically authorized by law, shall conduct or maintain any public or private hospital or institution wherein human beings are treated by a physician or midwife, without a permit from the Board of Health or otherwise than in accordance with the terms of said permit. Before issuing a permit the Department of Health will hereafter require that applicants submit three letters of endorsement for the purpose of reference, one as to good character, from a layman; a second as to good character and professional standing from a physician, and a third from some person or persons living in the immediate neighborhood of the proposed sanitarium.

The Mikveh Baths.—The Department of Health has for more than a year been interested in the sanitation of the Mikveh's and has stimulated the formation of the Mikveh Owners Association which, at the recommendation of the Board of Rabbis, has adopted the following rules which all owners of Mikveh's are urged to enforce:

1. The pool to be emptied after every fifteen baths, and at night.
2. The bath to be disinfected by adding two ounces of chlorinated lime for every 1,800 gallons of water, every three hours the bath is in use.
3. Bathers to be required to take preliminary soap baths.
4. Towels to be sterilized after use.
5. No waste water to be allowed to drain into pool.
6. Clean and adequate toilet accommodations to be provided.
7. Walls of room to be rendered impervious to water (by white enamel paint or otherwise) to at least six feet above the floor level.
8. Bathers to be safeguarded from danger of fire.

Fighting the Mosquito.—The Board of Health is taking active measures to combat the mosquito, which has been more of a pest this summer in all parts of the city than for many years. Twenty-one inspectors in the five boroughs have, in addition to their other duties, been making an inspection of unused yards, drains and roofs and have been responding to the numerous complaints that have been pouring into the offices of the Health Department. So far but few malaria-bearing mosquitos have been found but special facilities have been provided by the laboratory of the Health Department for the examination of the blood of persons suffering from malaria in the mosquito infested neighborhoods. The inspectors have found that what is most needed to prevent the growth of the hordes of mosquitoes is public education and the department announces that a pamphlet on this subject will soon be issued for general distribution.

Fine Old Whisky as Dangerous as the Cheap Raw Product.—The *Weekly Bulletin* of the Health Department quotes from the summary of the Investigation Concerning the Physiological Aspects of the Liquor Problem by Dr. John S. Billings, Jr., which was prepared for the Committee of Fifty, showing that the common idea that a large part of the injury to health from the use of alcoholic drinks is caused by the injurious substances in the liquor such as fusel oil and furfurol which have not been properly removed is erroneous as is also the notion that cheap liquors contain larger quantities of such ingredients than others. The injurious effects of the fusel oil are trifling in comparison with those of the ethyl alcohol. The general conclusion is that fine old brandies and whiskies are nearly as likely to produce ill effects as the cheaper varieties of the present time if taken in the same quantities and the injurious effect is in proportion to the ethyl alcohol contained.

Fumigation Abandoned.—On December of 1914 the practice of fumigation of premises after the occurrence of infectious disease was discontinued excepting in Brooklyn where it was continued as a control measure. The results of this experiment have now been made public. In the Borough of Manhattan 193 later cases occurred among 3,451 primary cases of diphtheria. Of these 171, 4.9 per cent. would not have been affected by fumigation, and 22, 0.6 per cent., might have been so affected. In Brooklyn where fumigation was performed, there were 138 later cases among 2,907 original

cases. Of these 110, or 3.8, would not have been affected by fumigation, and 28, or 0.9 per cent., might have been so affected. Thus there were half again as many later cases in Brooklyn where fumigation was practiced as in Manhattan where it was not done. Fumigation will now be abandoned in Brooklyn as well as in the other boroughs of the city and in its place emphasis will be laid on thorough cleaning, opening up to fresh air and sunshine, and renovation by painting, papering and kalsomining.

NORTH CAROLINA

Health Officer Goes to South America.—Dr. William H. Kibler, Rocky Mount, whole-time health officer of Nash County, has resigned to accept a more lucrative position with the International Health Commission in South America, where he will work in the hookworm crusade.

Typhoid and Smallpox in Greensboro.—During June, 24 cases of typhoid fever were reported in Greensboro, 23 of which were in white persons. There were also reported 11 cases of smallpox for the month. The general vaccination now being carried out against both diseases, gives confidence to the belief that both are well under control.

Registry for Tuberculosis Nurses.—The State Sanatorium for Tuberculosis, Sanitarium, which recently inaugurated a training school for nurses, has opened a registry for nurses in the state who have had special experience in tuberculosis and who desire to be registered as special tuberculosis nurses. Requests with credentials and other references should be made to the superintendent, Sanitarium, N. C.

Traveling Public Health Exhibit.—Arrangements have been made whereby the entire public health exhibit of the State Board of Health will make the rounds of the various fairs of the North Carolina fair circuit, starting with Durham County fair, September 31, and closing at Charlotte, October 26. The exhibit will be in charge of a competent demonstrator who will be assisted in various towns by local health officers and physicians.

Perfection of Vital Statistics.—J. C. Jermane of the Federal Census Bureau, Washington, D. C., has completed checking up the records of the Bureau of Vital Statistics of the State Board of Health. A number of physicians have recently been prosecuted for failing to comply with the law regarding the record of vital statistics and it is the intention of the bureau to continue these prosecutions until the records of the state shall be full and reliable.

Harper Sanatorium Rumor Incorrect.—The rumor that Harper Sanatorium, Wilmington, will be taken over by a group of local physicians; is incorrect, as no agreement has been reached between these physicians and the administrators of the estate of the late Dr. Charles T. Harper. Dr. Joseph Akerman, Wilmington, is now in temporary charge of the institution and will continue to look after its affairs in addition to his own private practice.

OHIO

To Establish Medical Library.—The surgeons of the Cleveland City Hospital have agreed to devote the fees received for making out certificates for the state industrial commission patients, to the establishment of a medical library in the institution.

Preventable Disease in Ohio.—The last issue of the *Ohio Public Health Journal* estimates that the state is losing about $100,000,000 a year through illness and loss of life due to preventable diseases. Of the 63,399 deaths in the state in 1913, 28,000 were preventable, and in the same year there were 56,000 cases of preventable diseases. The paper goes on to show that tuberculosis is 75 per cent. preventable; typhoid fever, 85 per cent. preventable; pneumonia, 45 per cent. preventable, and diphtheria, 70 per cent. preventable; that at least one-half of the deaths of infants under 1 year of age, one-third of the diseases of middle life and one-fourth of the ailments of later life, might be prevented.

Personal.—Dr. Willard C. Stoner has returned to Cleveland after spending the summer at the University of Michigan. ——Dr. Robert Henderson, Urbana, who has been seriously ill for a month, is now reported to be convalescent.——Dr. and Mrs. Stephen A. Cunningham, Marietta, have returned from Europe.——Dr. Roy C. Wolcott, Troy, has been appointed professor of internal medicine in the Ohio State University.——Dr. Eugene F. McCampbell, Columbus, secretary of the State Board of Health, has been elected professor of public health in the Ohio State University.——Dr. Howard B. Hills, Youngstown, was operated on for appendicitis at St. Elizabeth's Hospital, August 13, and is doing well.——Dr. Shelby Mumaugh, Lima, was seriously injured and his wife was killed, August 1, when the automobile in which they were riding was struck by a Pennsylvania train at Smith's Crossing.

Cincinnati

Shortage of House Staff.—Dr. Arthur C. Bachmeyer, superintendent of the General Hospital, is facing a serious dilemma. On September 10 seven of the members of the house staff will leave on account of expiration of term of service. Three members of the staff left the institution prior to the expiration of their term of service so that there is now an imperative demand for ten new interns without prospect of a supply.

Personal.—Dr. Thomas H. Kelly of the house staff of Cincinnati General Hospital has been given a leave of absence preparatory to assuming the position of assistant to Dr. Robert S. Morris, Forchheimer professor of internal medicine in the Medical College of Ohio.——Dr. Lowry L. McHenry, assistant resident physician at the Branch City Hospital, has resigned, taking effect September 1.——Dr. Emil M. Strasser, for several years district physician of the sixth and seventh wards, has resigned.——Dr. Leopold J. Fogel, formerly a member of the board of education, who was struck by a motorcycle, August 3, and seriously injured, is improving.

OREGON

Personal.—Dr. John N. Smith, Salem, has succeeded Dr. Frederick H. Thompson, Salem, as superintendent of the State Feebleminded Institute and assumed charge of the institution, September 1.——A. F. Bernard, assistant city chemist of Portland, is ill in St. Vincent's Hospital with diphtheria, contracted it is believed while examining cultures in the laboratory in the City Hall.

New Birth Registration Law.—Under the new births and deaths registration law all physicians and midwives are required to register locally as well as in the state before September 1. In Portland City Health Officer Marius B. Marcellus has notified all physicians and midwives as well as undertakers that they must comply with the law by furnishing names and addresses before that date.

Tick Fever to be Fought.—P. A. Surg. Lunsford D. Fricks, U.S.P.H.S., and Dr. Calvin S. White, Portland, secretary of the State Board of Health, left Portland August 19 for the Warm Springs Indian Reservation where several cases of Rocky Mountain spotted fever have been reported. During this tour of investigation, the counties of Malheur, Grant, Harney and Crook will be inspected. During the last year there were 46 cases of tick fever in Oregon with six deaths.

PENNSYLVANIA

State Meeting.—The sixty-fifth annual session of the Medical Society of the State of Pennsylvania will be held in the Bellevue-Stratford Hotel in Philadelphia from September 20 to 23. The House of Delegates will meet Monday evening, September 20, at 8 p. m.

Rabies.—The discovery of a case of rabies in a cow on a farm in Brighton Township, Beaver County, has resulted in the placing of the entire herd under quarantine by State Veterinarian C. W. Greenlee. One cow was shot and another was found dead. It is believed that the disease was communicated by a collie dog which has disappeared.

Dr. Buchanan Retires.—Dr. John J. Buchanan, professor of surgery in the School of Medicine, University of Pittsburgh, for the past fourteen years, has resigned his active teaching and has been elected professor emeritus. Dr. Robert T. Miller who for the past five years has been associate professor in the Department of Surgery, has been appointed successor to Dr. Buchanan.

State Health Exhibit on Tour.—The health exhibit of the Pennsylvania Board of Health has started on its circuit of county fairs. It will be absent for two months and twenty-one county fairs will be visited. The exhibit is under the charge of Dr. William C. Miller, Bedford, who for several years past has occupied the position of traveling tuberculosis lecturer for the State Department of Health.

Health Safeguards on Railroad.—The rule established by the Pennsylvania Railroad Company in 1913 that a physical examination be made of all dining car and restaurant employees every three months has been changed so that such examinations will be made every month. The railroad company announces that extra precautions have been taken to prevent the spread of communicable diseases on its trains.

Smallpox in Orphanage.—It is reported that 121 persons in the United Brethren Orphanage and Old Folks Home at Quincy, near Waynesboro, have been vaccinated because of smallpox. The matron of the orphanage was said to be ill with the disease. Ninety-seven children were vaccinated. In the Old Folks' Home there were twelve cases of smallpox among twenty-nine inmates. Dr. B. F. Royer of the state health office is in charge and has quarantined the institution.

State Health Board Takes Charge at Erie.—On account of the recent flood at Erie, the State Board of Health has taken charge of sanitary affairs in that city working with the Municipal Health Department. Directions have been given to boil all water not obtained directly from the city mains; to exclude children from the devastated district; to avoid the use of any foodstuffs which have been exposed to flood waters; to burn all garbage and household wastes; and it is advised that all persons exposed to flood water, be given the antityphoid inoculation.

Personal.—Dr. George B. R. Umstad, Phoenixville, who has been seriously ill, is reported to be improving.——Dr. Robert L. Walter, Walters Park, Warrensville, has purchased the Linden Hall property in Doylestown and will remodel the house as a sanatorium.——Dr. James A. Hamma, Carnegie, who last year received a Carnegie hero medal and $1,000, is about to receive from the International Association of Casualty Insurance Underwriters, the George E. McNeill gold medal for rescuing Mrs. Rose Morrison from death under a train in Carnegie in October, 1913.——Dr. George S. Hensyl and Dr. Harry J. Krebs of Mahonoy City were badly and painfully bruised as a result of an automobile collision.——Dr. William D. Martin of Washington County, father of the "Good Roads Day," has been appointed by Governor Brumbaugh a delegate to the Pan-American Congress to be held in California this month.

Adulterated Vinegar.—The state dairy and food commissioner reports that he has purchased in the open markets of the state, 235 specimens of vinegar and as a result of the analyses of these vinegars has forwarded to the makers a letter directing attention to that portion of the Pennsylvania Vinegar Law which relates that all vinegar "made wholly or in part from distilled liquor." The law requires that this shall be branded as "distilled vinegar" and that it shall be free from coloring matter; shall contain not less than four per cent. of absolute acetic acid and that it shall be sold and billed as distilled vinegar. This product, the commissioner finds, has been labeled and sold as "white vinegar," "amber vinegar," "red vinegar," and various other names. The letter furthermore, calls attention to the interpretation of the vinegar law to the effect that no cider vinegar can be sold in the state if it contains any added water, drugs or acids. The letter closes by expressing the hope that the manufacturer will so conduct his vinegar business that the law will be complied with and that by so doing, trouble will be saved for all concerned.

Philadelphia

Personal.—Dr. James C. Attix who has been seriously ill, is now reported to be convalescent and has gone to the Delaware Water Gap to recuperate.——Dr. E. Olivia White, sailed from San Francisco for Hawaii September 1. She expects to make a study of leprosy in the leper colony at Molokai.

Postgraduate Clinics.—Beginning with October 1, Dr. Robert N. Wilson will continue his Friday afternoon postgraduate lectures on the heart. These lectures will be given from 5 to 6 o'clock in the amphitheatre of the Philadelphia General Hospital. There are no fees nor obligations connected with attendance on the course and all physicians and medical students are cordially invited to be present. The lectures will continue every Friday afternoon until April 28, 1916.

New Law Fills Schools.—Enforcements of the new compulsory education law passed by the last session of the legislature with regard to children between 14 and 16 years holding working certificates, may make it necessary for 12,000 of these workers to return to full time in the schoolroom. The new law requires after Jan. 1, 1916, that all children must have completed the sixth grade before leaving school. It is said the Board of Education will recall all of the 20,000 working certificates now held by children under 16 years.

Drug Law Enforced.—The federal authorities on August 24, started investigation of the habit-forming drug situation in this city and as a result it is claimed 100 physicians and druggists are systematically violating the provision of the Harrison act. It has been found that an endless chain system exists among certain physicians and druggists who are dispensing the "alleged cures." It is reported that the material being supplied by these men to the drug habitués is morphin. Several dispensers of this drug have been arrested.

New Division in Department of Health.—The new housing division of the Bureau of Health has been completely organized by Director Ziegler and all appointments of individuals to carry on this division of the health department have been made. In addition the director of the Health Department has already appointed eleven nurses to permanent positions in the division of child hygiene. Ten thousand dollars was appropriated by councils for this purpose at their last meeting. The eleven nurses who were appointed on August 24 have been in the employ of the health bureau during the summer as district nurses and have been aiding mothers in the care of their children during the hot season.

Bakeshops Warned.—Dr. Ziegler, director of the Department of Public Health and Charities, has issued a bulletin to restaurants and bakeshops pointing out that the public is strongly averse to patronizing unclean eating places and that to gain favor bakeshops should at once install sanitary systems in their places of business. Cleanliness, freedom of dust, dirt and flies in the case of all foodstuffs and like care of utensils, floors, tables and everything pertaining to the serving of food and milk is an absolute necessity. Floors of bakeries should be constructed of impervious material. Unnecessary handling of foodstuffs should be avoided. Only waxed paper should be used for wrapping bread, pastries, etc., and all boxes, baskets or other receptacles containing food products conveyed through the streets should be tightly covered.

WISCONSIN

Tuberculosis Camp Opened.—The tuberculosis camp at Tomahawk Lake is now open for patients. The applications of eight have already been passed on by the State Board of Control and there is at present, room for about thirty. Only incipient cases will be accepted at the camp.

Whooping Cough.—An epidemic of whooping cough exists in Milwaukee and Health Commissioner George C. Ruhland urges citizens to aid in stamping it out before the opening of the schools. In one district in the eighteenth ward it is said there are twenty-nine cases. Notices have been sent out to all moving-picture theaters and to Sunday schools that children suffering from whooping cough must be excluded and the names of parents reported to the health department. An effort will be made to stamp out whooping cough before the opening of the schools.

New Hospital.—Drs. Edmund W. Timm, Milwaukee, and William F. Hilger, Milwaukee, have filed articles of incorporation for the Washington General Hospital to be erected near Washington Park, Milwaukee. The institution is capitalized at $35,000. The building will be three stories in height and will provide accommodations for 64 patients.

Personal.—Dr. John M. Dodd, Ashland, has succeeded Dr. John M. Beffel, Milwaukee, as secretary of the State Board of Medical Examiners. Dr. Beffel still remains on the board.——Dr. Argo M. Foster, Racine, was seriously injured in a collision between his automobile and an interurban car at Wright Street, Racine, August 18. Dr. Foster is suffering from a fracture of the skull, a fracture of the shoulder and numerous cuts and bruises.

Tuberculosis Information Bureau Opened.—The Wisconsin Antituberculosis Association has established a central bureau of information through which physicians, nurses and patients may learn of vacancies in the various county sanatoriums of the state.——Brown County has recently increased the accommodations at its sanatorium by the addition of two porches.——Eau Claire County is building an addition which will increase the capacity of its sanatorium from thirty-two to fifty patients.——Muirdale, the new Milwaukee County Sanatorium when completed will accommodate about 300 patients.

WYOMING

Basin Physicians Organize.—Physicians and dentists of the Big Horn Basin met recently and organized the Northwest Medical Society and elected the following officers:

president, Dr. Walter O. Gray, Worland; vice president, Dr. Jesse D. Lewellen, and secretary-treasurer, Dr. Theodore B. Torjuson, Lovell.

CANADA

Motor Ambulance Donated.—Orillia, Ont., has contributed three motor ambulances for service in France. The ambulances will be built in Orillia and manned by Orillia men.

Edmonton Physicians Favor Prohibition.—The Academy of Medicine, Edmonton, has adopted the following temperance resolution: That the Academy of Medicine of the City of Edmonton, Alta., go on record as being in favor of prohibition in the Province of Alberta and endorse the proposed liquor act for the suppression of the liquor traffic in Alberta.

Hospitals for Wounded Soldiers.—The Academy of Medicine, Toronto, through its council, has adopted a resolution calling for the immediate establishment of hospitals for the wounded soldiers returning to the city. They recommend a clearing hospital in Toronto. As a result it is announced that convalescent homes are to be opened in Toronto next week. Arrangements have been made to provide for the care of the tuberculous at the Muskoka Sanitarium, Gravenhurst.

Sound Teeth for the Soldiers.—Canada has recognized the importance of sound teeth for the soldier. There are now with the oversea troops from Canada fifty-five to sixty dentists and about twenty-five more are at work in the camps in Canada. All these dentists are regular officers of the Canadian army. At the beginning of June Britain had about seventy dentists at the front but these have no permanent army status. There is no expense attached to the work to the soldier, the expense being borne by the militia department.

Hospital News.—The Canadian Red Cross Society has been obliged to decline an offer from Norway to take care of Canadian wounded when they have sufficiently recovered to spend their time in fishing.——Forty-eight patients were admitted to the Hazelwood Sanitarium for Tuberculosis at Halifax, N. S., between January, 1914, and May, 1915. All were suffering from tuberculosis in an advanced stage. Twenty-eight were discharged, six of whom died subsequently, and twenty deaths occurred at the institution. Improvement was shown in 12 cases and 9 are now at work. ——A new hospital is being erected at Newcastle, N. B., with accommodation for over forty patients.——Prince County Hospital, Prince Edward Island, admitted 303 patients from June 1, 1914, to May 31, 1915. The building is to be enlarged, as the accommodation is overtaxed.—— The Women's College Hospital and Dispensary was opened at Toronto July 17. Dr. Geraldine Oakley, Northampton, Mass., has been appointed superintendent. It has twenty-one beds.——A whooping cough clinic has been opened at the Sick Children's Hospital, Toronto. It is said to be the first of its kind in America.——Winnipeg General Hospital gave treatment to 4,784 patients during the first four months of the present year, a thousand more than in the same period in 1914.

Personal.—Dr. Ernest R. Myers, Saskatoon, has been appointed regimental surgeon of one of the Saskatchewan regiments of the Canadian expeditionary force.——Dr. Karl Hollis, Toronto, Ont., a student of Mount Allison University, N. B., six years ago and a graduate of medicine of the University of Pennsylvania, has been gazetted to the Canadian medical corps.——Dr. Howe A. Jones, Salisbury, N. B., has left for Halifax, N. S., for a two months' military course before joining the Canadian medical corps for overseas service.——Dr. Herbert B. Rogers, Victoria, Vancouver, is going to France and will be attached to a hospital corps for special work.——Lieut. H. Kendall Bates, M.D., Toronto, has left for the front with B section, No. 2 field ambulance.——Lieut. D. E. Wishart, son of Dr. D. J. Gibbs Wishart, Toronto, has been granted a commission in the Royal Army Medical Corps. ——Dr. Alfred K. Haywood, assistant superintendent, Toronto General Hospital, and medical officer third battalion, first brigade, and who has been operated on in London for appendicitis, sailed for Toronto on the *Missanabie*, August 20.—— Capt. James A. Henderson, M.D., Regina, Sask., has entered the Royal Army Medical Corps. Captain Henderson saw service in South Africa where he won two bars and three medals for bravery on the veldt.——Dr. John R. Irwin, Cobourg, Ont., has left to join the R. A. M. C. in England. Being a member of the town council of Cobourg, the doctors of the town presented him with a solid gold wrist watch, and the matron and nurses of the hospital gave him a signet ring.

GENERAL

Meeting of the American Social Hygiene Association.—The annual meeting of the American Social Hygiene Association will be held at Boston, Oct. 8, 1915.

Mayo Addresses Interstate Physicians.—Dr. Charles H. Mayo, Rochester, Minn., was the guest of honor at a dinner at the Hotel Blackhawk, Davenport, Ia., September 1. After the dinner he delivered an address on "Infection as a Cause of Local and General Disease," before the Iowa and Illinois Central District Medical Association.

Examiners for Civil Service Commission.—Physicians desiring to be designated as local medical examiners for the United States Civil Service Commission who are willing to execute medical certificates in connection with Civil Service Examination for a fee of $1.00, are requested so to advise the District Secretary, Fourth Civil Service District, Washington, D. C.

Washington Leper at Pittsburgh.—The leper, Emil R. Grable, who escaped from detention in Washington, D. C., was found at Pittsburgh and is now in custody there, living in a tent.——The leper found in Michigan is in charge of the authorities of the University of Michigan at Ann Arbor, where he is under treatment by Dr. Udo J. Wile of the Department of Dermatology.

Personal.—Surgeon Victor G. Heiser, U.S.P.H.S., formerly Commissioner of Health, Philippine Islands, arrived in New York from London August 11. Dr. Heiser has returned to the United States to make a report to the Rockefeller foundation of his investigations in the Philippines and India of hookworm and other diseases.——Drs. Jorge del Toro, Jose S. Belaval and Walter A. Glines, all of San Juan, announce the opening of the Porto Rico Sanatorium at Santurce, P. R.

Pellagra Conference.—The third triennial conference for the study of pellagra will meet again in Columbia, S. C., in October. The conferences of 1909 and 1912 were held in Columbia. Surgeon-General Blue of the United States Public Health Service has announced that experts from the Public Health Service will be detailed to attend the convention. There are about 175 members of the conference; Dr. J. W. Babcock of Columbia is secretary, and chairman of the committee on arrangements. Dr. C. H. Lavinder is president of the conference.

Bequests and Donations.—The following bequests and donations have recently been announced:

Harper Hospital, Detroit, $10,000, to pay expenses of Y. W. C. A. women unable to pay their own. Women's Hospital, $5,200 for a free dispensary and $1,000 for equipment of rooms in hospital; the University of Michigan, Ann Arbor, $6,000, to be known as the Florence Huson fund to defray the expenses of women students (preferably of medicine), by the will of Dr. Florence Huson, Detroit.

Riverside Infirmary, Charleston, S. C., from $60,000 to $70,000 for the erection of an annex to be known as the Joseph Thompson Annex, or enlarging or remodeling of the present building. It is then to be called the Joseph Thompson Infirmary. St. Margaret's Home for Incurables, $10,000, and Dr. William Henry Johnson, $10,000 by the will of Mrs. Rosa Thompson.

Mount Sinai Hospital, New York City, for the purpose of establishing a convalescent home to be known as the Valeria home, the residuary estate of Jacob Langecloth, valued at $3,414,552.

Cornell Educational Association—A Warning.—In spite of repeated warnings, some of our readers are still allowing themselves to be swindled. The latest scheme is one that appeals to those who are ever ready to help a fellow mortal. As one of the victims writes, "The scheme looked genuine to me and I concluded to assist the young man in obtaining a scholarship." This young man has a regular printed blank indicating that he is a "contestant" for a prize in the form of a scholarship in Cornell, to be awarded to the one who sends in the most business in a certain length of time. The doctor was "worked" for $10 for THE JOURNAL of the American Medical Association and $5 for the *Literary Digest*. The address given as the headquarters of the concern is 416 N. Clark Street, Chicago. This is a three-story brick building with a barber shop and restaurant on the first floor, a theatrical costuming establishment on the second, and the third is used for renting out cheap furnished rooms. There was no evidence of any Cornell Educational Association, or of any other organization.

Warning against Canning Compounds.—The U. S. Department of Agriculture has issued a warning against the use of salicylic and boric acids as preservatives in the canning of fruit. It is said that these drugs are sold under various trade names with instructions to put a teaspoonful in the top of the fruit jar just before closing it. While these drugs may prevent decay for a while, their use may be accom-

panied by disturbances of health, chiefly derangements of the digestion. The use of such preservatives in fruit canned and sold in interstate commerce is prohibited by the Food and Drugs Act, and various states have regulations concerning their use. These laws do not cover the use of canning compounds in fruit for domestic use put up in the home. It is on this account that the warning is issued. It is pointed out that fruits and vegetables can be kept indefinitely if they are sterilized by heat and properly sealed. The department calls attention to the bulletins issued on the canning and preserving of fruits and vegetables, which may be procured on application to the department, Washington, D. C.

Examination for Bacteriologist.—The United States Civil Service Commission announces an open competitive examination for sanitary bacteriologist for both men and women September 22, to be held at points throughout the United States where such examinations are usually held. From the list of eligibles resulting from this examination certification will be made to fill several vacancies in this position in the Public Health Service for duty in the hygienic laboratory, Washington, D. C., or for field service. The salary is $1,500 per year and the duties of the position are to assist in the study of stream pollution, water supplies, sewage disposal and other public health problems. Applicants should be competent to make the usual bacteriologic examination of water and sewage. Graduation from a scientific course in a recognized college or university or the degree of doctor of medicine is a prerequisite for consideration. Applicants should be between 20 and 35 years of age. A knowledge of French and German is desirable. Persons who desire to take this examination should apply to the United States Civil Service Commission, Washington, D. C., for form 1312.

FOREIGN

Spanish King's Surgeon in America.—Dr. Florestan Aguilar, personal physician to the King of Spain, arrived in America recently on his way to San Francisco where he is to deliver an address on "Surgery of the Face," before a medical convention.

Production of Salvarsan Beyond Sway of Patent Laws.—The *Dermatologische Wochenschrift* of August 7 states that the production of salvarsan is now under way at Dairen, where the Southern Manchurian R. R. has a laboratory. The chemical research preliminary to its production is said to have been done in Japan. Manchuria is said to be a part of the world over which patent laws have no jurisdiction.

The Mineral Waters of Portugal.—Our Lisbon exchange, the *Medicina Contemporanea* arrives this week as a bulky double number entirely devoted to a compilation of the scientific data on the mineral waters of Portugal. The springs are classified according to their composition, actions and uses, with a number of practical suggestions to guide physicians in their advice to patients, a timely work now that the spas of Europe are rendered inaccessible to foreigners by the war.

WAR NOTES

Personal.—Dr. Alexis Carrel, New York City, of the Rockefeller Institute will, it is reported, receive the next promotion to the rank of Chevalier of the Legion of Honor.

Red Cross Units Return.—The National Red Cross has directed the return to the United States, not later than October 1, of all Red Cross units except those in Belgium and Serbia.

Cholera in Austria and Germany.—The Austrian Minister of the interior is reported to have announced that on August 19, there were 1,506 cases of cholera reported in Austria. The bathing places on the river near Berlin have been closed by the police on account of the prevalence of cholera among the shipworkers in the Brandenburg district.

Red Cross Day.—August 28 was celebrated at the Panama-Pacific International Exposition as "Red Cross Day," and a program was carried out which included an address by Miss Mabel Boardman, chairman of the National Relief Board, on "What the American Red Cross has done in War and Peace," and an address by Ex-President William H. Taft on "The Efficiency and Economy of our American Red Cross and its Neutrality."

Aid for Belgian Physicians.—The report of the treasurer of the committee of American Physicians for the Aid of the Belgian profession for the week ending August 28, 1915, lists the following contributions:

Warren County Medical Association, Vicksburg, Miss.	$ 10.00
Receipts for the week ending August 28	$ 10.00
Previously reported receipts	7,804.84
Total receipts	$7,814.84
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
353 standard boxes of food at 2.28	804.84
Total Disbursements	7,310.04
Balance	$ 504.80

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

BERLIN LETTER

BERLIN, July 20, 1915.

Epidemics in the Franco-Prussian War

In order to gain a correct idea of the progress made in the prophylaxis and treatment of diseases incident to war, it will be profitable to draw comparisons. Readers will be interested to receive some information with regard to the infectious diseases prevalent now which may be compared with those rampant at the time of the Franco-Prussian war of 1870-1871.

The German fighting strength in round numbers was 936,000 men, and the total number of persons participating in the conduct of the war was 33,100 officers, surgeons and officials and 1,113,250 soldiers. Of this number, 475,400 sick entered the hospital during the duration of the war; that is, 60.3 per cent. of the fighting strength and 42.7 per cent. of all those participating in the war. Comparing these figures with the years preceding the war, one is forced to the conclusion that the total number of sick during the war must have been higher than stated, and that persons only slightly ill did not, as in times of peace, apply for admission to the hospital, but remained ambulant.

A glance at the morbidity of each arm of the service shows that during times of peace it was lower among the infantry than among the members of the transportation corps, whereas, during the war these figures were reversed, 69.8 per cent. of the morbidity occurring among the infantry, and 69.5 per cent. among the members of the transportation corps. The artillery showed 55.8 per cent. morbidity, engineers 54.8 per cent. and cavalry 37.5 per cent. The higher morbidity among the infantry is easily accounted for by the fact that the infantry endures greater hardships, and is more exposed to the spread of infectious disease because of the closer contact of the men in camp.

The total mortality was 14,904, or 1.82 per thousand of the entire army. Infectious diseases were responsible for the greatest percentage of the morbidity, namely, 123,951 cases. Typhoid and dysentery headed the list, smallpox and malaria coming next. Infectious diseases caused 11,600 deaths, about three fourths of the total mortality, or 1.43 per thousand of the total army strength.

INTESTINAL DISEASES

Typhoid (usually the abdominal typhoid, only a few dubious cases of typhus fever occurring) attacked 74,205 persons, 73,396 of these being men in the field. Of this number, 8,904 died, 8,789 of these being soldiers. The greatest number of cases occurred during the months of September, October and November (42,845), in this regard not differing from the morbidity statistics in times of peace. On the whole, however, the morbidity rate was higher during the war. This is easily explained by the crowded conditions of the camp maintained for long periods of time during the sieges of Metz and Sedan. The besieging army in front of Paris suffered considerably less, whereas, the soldiers besieging Strassburg suffered very little. Among the soldiers besieging Metz, there occurred 12,607 cases of typhoid. Impure drinking water, severe and continuous rains, and inefficient, sanitary regulations (due in part to the nature of the soil which hindered seepage of dejecta) favored the development of the epidemic. The mortality rate of 12 per cent. of the sick was comparable to the mortality rate in times of peace, but it is significant that 60 per cent. of all deaths in the entire German army was caused by typhoid. Dysentery also attacked large numbers, especially in the besieging armies of Metz and Sedan, although the troops at Saarlouis and Saarbrücken suffered almost as much, the infection probably coming from the French civilians as well as soldiers who had been encamped on the site later occupied by the German army.

SMALLPOX IN 1870-1871

With regard to smallpox, the statistics are also rather interesting. Very few cases occurred among the soldiers during their march out of Germany (seven cases in July, none of these occurring among the Prussian, Hessian or Baden troops). There was very little smallpox among the civilians in Germany, whereas, in France, even before the commencement of the war, smallpox was almost epidemic in some localities, notably in Bretagne. The mobilization of the troops favored the spread of the disease, not only among the soldiers but also throughout France. Many of the young soldiers had never been vaccinated; others had not been revaccinated for a long time. In 1869, only 71 per cent. of the birth rate was vaccinated, and in some departments (civil), the percentage was 30, 18 and even 17. Hence, many of the recruits were not only highly susceptible to the infection, but also were admirable agents for the spread of the disease. Many were infected when they joined the colors; others were quartered in infected houses in Paris, and carried the infection out into the field in all parts of France, resulting in many local epidemics. The official French statistics for those years are not very reliable on this point, but they show that smallpox was present in at least fifty-three departments, 40,000 cases occurring in forty-two departments alone. It is further stated that the total loss to the civilian population during the war was 90,000 cases. Under such conditions it is not very astounding that the German army likewise became infected with smallpox. There were 4,835 cases of smallpox with 278 deaths among the privates, and 45 cases with one death among the officers; fifteen cases with two deaths in the medical corps, and ninety-six cases with sixteen deaths among the officials. The spread of smallpox varied in the different army corps. The greatest number of cases (1,033) occurred in the troops before Paris. This may be explained in part by the fact that the vaccination was not carried out very thoroughly or carefully. In the besieging army were troops from Saxony, Hesse and Mecklenburg, and wherever these soldiers were stationed the same state of affairs existed. French troops and French civilians likewise were not vaccinated properly, and therefore easily fell prey to smallpox. Reliable statistics bearing on this point are not to be had, although it has been said and written that more than 23,000 persons died from smallpox. This may be an overstatement, but whatever the mortality was or may have been, it was greater among the French than among the German soldiers. Among the French soldiers in Paris there were 11,500 cases in six months, and only 1,600 cases in the same period of time among the German soldiers. The same figures obtained among the French prisoners in Germany, and the immobilized German troops. The latter, as well as the civilian population, were infected with smallpox by the French prisoners. Among these German soldiers, there were only 3,472 cases of smallpox; that is, 19 per cent. of all the hospital patients, whereas among the 372,918 French prisoners, there were 14,178 cases of smallpox, or 87 per cent. of all the French hospital patients. These statistics led the German military authorities to conclude that inasmuch as the occurrence of smallpox was dependent entirely on the efficiency of the vaccination of the individual, vaccinations made during the war proved to be preventive, modifying and restricting of epidemics. Most cases occurred among persons not revaccinated or in whom the revaccination was a failure. The degree and severity of the disease was modified by the degree of efficiency of the vaccination. The result of these observations was the order issued April 8, 1874, requiring vaccination throughout the German Empire. Another infectious disease to be mentioned is intermittent fever. There occurred 8,334 cases, mostly mild, of short duration and with no fatalities. There were 124 cases of epidemic meningitis with 84 deaths; 174 of diphtheria with twenty-four deaths; seventeen cases of cholera nostras with twelve deaths, and a few scattered cases of scarlet fever and measles with no deaths.

BERLIN, Aug. 10, 1915.

Personal

Professor Römer, who was called to Greifswald last year, has been appointed successor to Professor Fränken (Fränkel) at Halle.

Professor Haendel, director of the hygienic institute in Saarbrücken, has been appointed director of the imperial health bureau, succeeding Geheimrat Lentz.

Privat-Docent Rost has been appointed professor of dermatology in Freiburg, succeeding the late Professor Jacoby.

Professor Magnus of Utrecht has been made ordinary professor and director of the pharmacologic institute at Halle, succeeding the late Professor Harnack.

Recent Deaths in the Profession

Professor Proskauer, director of the Berlin bureau of food and trades inspection, died July 24 of apoplexy, aged 65. Proskauer was a chemist originally, but became actively identified with public health work through his association with Robert Koch in the imperial health bureau and later in the hygienic institute of the university. He also rendered valuable services in the institute for infectious diseases, and was considered an authority in the field of water supplies and sewage disposal. He did a great deal of work in research on disinfection. In 1907 he was appointed director of the Berlin bureau of inspection.

The well-known ophthalmologist, Geheimrat Adolf Weber, died in Darmstadt, July 17, aged 86. He was a pupil of Albrecht von Graefe.

Prof. C. Harms, privat-docent in ophthalmology at Tubingen, died on the field of battle.

Prof. C. Lauenstein, for many years surgeon at the Marine Hospital in Hamburg, died August 1, aged 65 years.

Prof. B. Fischer, director of the hygienic institute at Kiel, died August 5 in a hospital at Ypern, where he had been serving as a consulting sanitarian. He was 63 years of age. Originally a marine surgeon, he was ordered to the imperial health bureau in 1882, and in that capacity accompanied Koch on his expedition to Egypt and India for the purpose of investigating cholera. In 1887 he returned to Kiel. In 1889 he accompanied the German Plankton expedition to South America as surgeon. In 1899 he was appointed professor of hygiene. The result of his service on the Plankton expedition was a series of bacteriologic investigations of sea water and sea air and especially of the phosphorescing bacteria of the sea. Other publications dealt more specifically with the subject of disinfection.

The War

About 1,430 German dentists have been in the field. Of this number, 123 have been killed, seventy-eight wounded and eleven taken prisoners. These men are not members of the sanitary corps, but are used in their professional capacity only as occasion demands. There are 853 dentists in the ranks, and 320 are rendering dental service with the troops and in hospitals. At home there are 177 in service.

About 53,400 sophomore students, coming from the twenty-two German universities, have been enrolled for service. About 42,000 of these are in the field, are being trained for military service or are aiding in the care of the sick and wounded. There are 300 women students serving as nurses. The remaining 12,000 students are still pursuing their studies.

The exchange of severely wounded and imprisoned members of the sanitary corps is continuing with France, and has been begun with England and Russia. Varying reports of the treatment received by these prisoners at the hands of the enemy are being published in the newspapers. It is to be expected that the statements of these soldiers will be taken with a "grain of salt" because, naturally, personal grievances are apt to obscure sound judgment.

Opening of the Langenbeck-Virchow Building

The "Langenbeck-Virchow Haus," built by and for the Berlin Medical Society and the German Surgical Association, was opened August 1. The ceremonial opening was postponed until after the conclusion of the war. The auditorium, three stories high, has a seating capacity of 900. The galleries have a seating capacity of 335. The room is lighted by day through a skylight, and in the evening by eighteen electric arc lamps of 25,000 candle power. The auditorium is 13 meters high, 24 meters long and 17.5 meters wide. Artificial ventilation is provided for so that the air may be renewed every hour. On the first floor is a smaller hall with a seating capacity of 200. Both rooms are provided with epidiascopes and kinetoscopes and can rapidly be darkened. Small rooms, contiguous to the auditorium, are provided for waiting rooms for patients, and in one a small laboratory has been installed. The reading room and library, containing 200,000 volumes, is on the third floor. One small room contains the library bequeathed to the Berlin Medical Society by Virchow. The larger reading room is furnished with twenty-five tables at each of which two

may be seated. Other small rooms are provided for such readers as wish to work quietly and undisturbed. Refreshments may be had on the first floor. Stores occupy the first floor street front, and will be rented to concerns identified with medicine, such as instrument houses, book dealers, etc.

PARIS LETTER

PARIS, Aug. 12, 1915.

The War

THE MEDICAL SERVICE AND ITS DESIDERATA

M. André Maginot, deputy and former assistant secretary of war, has just published a very instructive article on the workings of the medical service. He recognizes, in the first place, that it is not easy, with insufficient numbers to draw on, to prepare from one day to another for the exigencies of an unprecedented situation and to assure the transportation, the lodging, the medical treatment and the care of several hundred thousand wounded men. Neither has it been easy to employ in the same organization civilian physicians, many of whom have had no military experience whatever or have had it only a long time ago, and military physicians, whose habits and point of view are necessarily quite different, so as to make use of the abilities of each for the best interests of the wounded. These difficulties, in addition to the material embarrassments which have to be faced, complicated the task of the medical service greatly at the outset. In order to be just, therefore, demands for improvement should be moderate, no matter what the defects may be.

The medical staff is at present numerically sufficient, thanks to liberal appointments of civilian physicians. The possibilities of increase, however, are naturally limited by the number of physicians to be drawn on. We ought to try, however, to make the best use possible of the staff that we have. Important progress has already been made. Special abilities are better utilized; but this is not enough. A much larger number of our physicians and surgeons ought to acquire experience at the front. This would give those who have been there for a long time a chance to recover somewhat in the less fatiguing service of the base hospitals, which would derive much benefit from the experience that they have acquired. Meanwhile the others would have the opportunity to learn how best to adapt themselves to the necessities of war. It is not fair that some should have a comparatively easy and comfortable time during the whole period of hostilities, while others are indefinitely kept in the hardest and most dangerous places.

As for the nursing staff, it must be admitted that the numbers are often insufficient, especially in the base hospitals, where too much reliance has been placed on volunteer assistance. The result is that the patients do not receive all the care that they should and that many hospitals are kept in bad order. The staff should be enlarged. This ought not to be difficult, for the possibilities of recruitment are not limited as they are in the case of physicians and surgeons. The men of the auxiliary service who have not yet been called to the ranks might be employed. Another method would be to give the sedentary positions, like those of doorkeepers or recording clerks in hospitals, to convalescent wounded men who under present regulations must be discharged. Such positions might very well be filled by men who have infirmities of the legs or feet or who have even lost one or more limbs. This would release the present holders of such positions for employment as orderlies, etc.

It is in respect to supplies of such things as means of transportation, hospital appliances, etc., that the present state of affairs leaves most to be desired. Transportation of the wounded is still too much subject to delay. Many of our hospitals are still without indispensable appliances and provisions. The wounded are too often placed in crowded and unsuitable quarters. Everyone recognizes that improvements are necessary.

M. Maginot draws attention especially to the fact that the lack of necessary supplies in certain of our hospitals and the bad working of the services because of this lack are often due to the fact that the heads of these hospitals are afraid to ask for what they need. Their previous requests have received no response or else have been met with reproof. They have been told over and over again to economize. Some hospital superintendents, therefore, being anxious to avoid getting into trouble and appearing poor administrators in the eyes of their superior officers, have formed the habit of turning a deaf ear to the most reasonable requests. Thus there are surgical services without the most elementary means of sterilization; and mechanotherapeutic installations, which might be most usefully employed, are unused for lack of the necessary equipment to complete them.

Such bad habits should be broken up as soon as possible, and peremptory instructions should be given against them. The wounded ought not to suffer from the parsimony of the one class or the timidity of the other. Moreover, from the financial side alone, this absurd conception of economy leads to waste of public resources. Every death, every loss or amputation of a limb which might have been avoided with better care, it must be remembered, will some day mean pensions to be paid. The bill for this will be heavy after the war, not to speak of the loss inflicted on the productive capacity of the country. With but a small portion of the cost of the pensions thus necessitated, it would be possible to equip our hospitals with all that they need and thus avoid putting such a heavy charge on the future.

Rice Bread

I have mentioned in a previous letter (THE JOURNAL, May 22, 1915, p. 1777) the use of rice flour in bread. The department of commerce has for some time been studying the question of rice bread or, to speak more exactly, of bread containing a proportion of rice. Samples of bread containing 15 per cent. of rice were presented two weeks ago to each of the administrative officers of the government, and recently samples of bread containing 10 per cent. of rice have been distributed to senators and deputies. This proportion ought not to be exceeded, for a higher percentage will result in a bread which is too difficult to digest. There is no lack of wheat in France, and, even if there were, there is no reason why it should not be imported as in ordinary times. The government, however, desires to reduce the purchases made from foreign countries to a minimum. The economy which would result from the adoption of rice bread is estimated at 500,000,000 francs ($100,000,000). The commerce department, however, intends to study the question from all sides before coming to any decision on it.

Vaccination Against Smallpox

The inhabitants of Paris and its vicinity are being advised by means of notices posted in the name of the Conseil d'hygiène publique et de salubrité du département de la Seine to be vaccinated against smallpox. In view of present circumstances, all the inhabitants, without distinction of age or sex, who have not been vaccinated within five years, are urged to be vaccinated. Information with regard to the dispensaries where vaccinations are performed free is given in the mayor's offices of the respective arrondissements and communes.

LONDON LETTER

LONDON, Aug. 13, 1915.

The War

THE TREATMENT OF WOUNDS

A controversy is being waged regarding the treatment of battle wounds. On one side Sir Watson Cheyne, president of the College of Surgeons and the exponent and once the assistant of Lister, is the protagonist. He advocates the application of strong antiseptics for the purpose of disinfecting wounds. On the other side Sir Almroth Wright, who appears to be followed by most of the surgeons with the British forces in France, declares that antiseptics are useless for this purpose and advocates "lymph lavage" (the application to the wound of a hypertonic solution of salt to promote the outflow of lymph). The idea is that this lymph is favorable to phagocytic activity and inimical to microbes. He considers that the best application is a 5 per cent. solution of common salt combined with 0.5 per cent. sodium citrate to render the lymph incoagulable. During this controversy, a discovery attributed to Dr. Alexis Carrel and Mr. H. Dakin has been announced by Professor Landouzy at the Academy of Sciences in Paris. He explained that a powerful antiseptic, known to science as chlorinated lime, had up till now been of no practical utility on account of the difficulty of preserving it and because of its acidity, which was injurious to human tissues. Dr. Carrel and Mr. Dakin surmounted these difficulties by adding boric acid as a preservative and calcium carbonate to counteract the acidity. The new preparation had been applied to the most frightful wounds with the result that within eight days their aspect had been modified in a way quite unknown under

the old antiseptic processes. Cases of gangrene had been radically prevented at the very outset. Indeed, if the new antiseptic was applied in time, it was not too much to say that the infection of wounds might henceforward be considered impossible. No sooner had this discovery been announced than a claim of priority had been brought forward for Dr. Lorrain Smith, professor of pathology in the University of Edinburgh. At the request of the National Health Insurance Research Committee, he undertook a research on antiseptics, and five months ago recommended what appears to be the same substance as Dr. Carrel suggests. It has been used with success in the British military hospitals in this country and in France.

AUSTRALIA AND THE WAR

The spontaneous manner in which the colonies have supported the mother country in the war is one of the striking features of the situation. Here, of course, only the medical aspect can be dealt with. According to the Australian minister of defense, no fewer than 500 physicians, which represents 20 per cent. of the whole profession, are serving at the front, and yet a still larger proportion is wanted. It is also proposed to supply eighteen hospital ships, each of which will be accompanied by four medical officers. To counteract the anticipated shortage of physicians for civil practice, the three Australian universities are accelerating the passage of medical students through their curriculum, though there will be no lowering in the standard of examination. The students will simply have to work at higher pressure. At Melbourne University, the students who would have presented themselves for examination in March, 1916, will be allowed to go up in November, 1915. Already a large proportion of the fifth-year students and practically all the fourth-year students have offered their services to the defense department. Physicians are required not only for work at the front, but also for military work at home. Five or six thousand soldiers are returning to Australia invalided from wounds or sickness; some of these will require special surgical or medical attention, which can best be given in hospitals.

An English Successor to a German Nostrum

In a previous letter (THE JOURNAL, Dec. 12, 1914, p. 2145), I described the attempt of a British company to capture the business of sanatogen, as trading in this German nostrum has been prohibited since the outbreak of war. In their latest circular, the company again endeavors to exploit the strong anti-German feeling prevailing in this country as follows: "We are surely right in endeavoring to secure the trade which has hitherto been done by a German, and it is not unfair to take all the advantage we can of the indignation which all Britishers, and indeed all humanity, are feeling against an enemy who does not scruple to use deathly asphyxiating gases to destroy our gallant soldiers and who looks callously on at our helpless drowning." The following claims are put forward:

1. Sanaphos is a milk product containing all the constituents of milk with a reduction of fat to suit plethoric patients. It is obtained by a physical process, not a chemical one, and at such a low temperature that the vitality of the original milk due to vitamins and enzymes is retained. 2. This is the best basis for administering organic phosphates so as to secure the highest efficiency of a food and nerve tonic. 3. The less foods in their natural state are interfered with by chemical processes, the better are they adapted for highly nutritive purposes, and this is especially the case with milk. 4. Attempts have been made to establish that casein is the most important constituent of milk; this is an obvious fallacy, because on this basis infants would do well on cheese. Casein is a chemically separated substance derived from milk, and it does not supply the body's complete needs. 5. Clinical evidence extending now for over six months abundantly supports the view that sanaphos is the most attractive and effective recuperator of nerve and energy. Its uniquely favorable effect in sleeplessness, cured without drugs, bears remarkable witness to this.

It is remarkable that the circular containing these absurd claims, quite on the old lines, is addressed not to the public, but to physicians. The motto of the nostrum man is evidently *toujours l'audace*.

The Fortune of a Nostrum Man

The estate of the late Mr. Eno, the proprietor of Eno's fruit salts, is valued at $8,000,000. This immense fortune has been made out of an aperient consisting of sodium bicarbonate, tartaric acid and citric acid which is extensively advertised, though not in a very flagrant manner. It claimed to be "health-giving, pleasant, cooling, refreshing, gentle and safe in its action"; "keeps the blood pure." Mr. Eno left large sums to hospitals and other benevolent institutions. His fortune is by far the largest left by a nostrum man and the largest left by any "patent medicine" proprietor (as distinct from those combining therewith the manufacture of patent foods). Among these may be mentioned the following sums: Senator the Hon. George Taylor Fulford, proprietor of Dr. Williams' pink pills (a Canadian), $6,500,000; Mr. Alfred B. Scott, of Scott's emulsion, $850,000; Mr. George Handyside, of Handyside's consumption cure, $700,000; Mr. Robert Dyer Commans, of Areca nut tooth paste, $550,000; Mr. Walter Tom Owbridge, of Owbridge's lung tonic, $550,000; Mr. Thomas Beecham, of Beecham's pills, $400,000.

Marriages

FOREST HENRY FREY, M. D., Warsaw, Wis., to Miss Gertrude Helen Moran of Kane, Pa., August 26.

HERMAN FRANK VICKERY, M.D., Boston, to Mrs. Anna Louisa Howe of Brookline, Mass., August 14.

WALTER G. SEXTON, M.D., Marshfield, Wis., to Miss Ethel H. Moran, of Baltimore, August 25.

ROBERT ERNEST KINLOCK, M.D., to Mrs. Florence Bullard Smith, both of Brooklyn, August 17.

PHILIP WORK, M.D., Pueblo, Colo., to Miss Helen Tuttle, of Denver, August 18.

Deaths

Green Vardiman Black, M.D. Northwestern University Medical School, Chicago, 1884; aged 79; of Chicago; dean of the Northwestern University Dental School and known as "the father of modern dentistry"; a member of the Illinois State Medical Society; died at his farm near Virginia, Ill., August 31, from pernicious anemia. He was born near Winchester, Ill., Aug. 3, 1836; received his degree of D.D.S. from the Missouri Dental College, St. Louis, in 1877; he was also given the degree of Sc.D. by Illinois College, Jacksonville, in 1892, and that of LL.D. by Northwestern University, Evanston, Ill., in 1898; he was appointed dean of the Northwestern University Dental School in 1895, and also filled the chairs of operative dentistry, pathology and bacteriology in the institution. He was the author of several standard textbooks on dentistry and was a frequent contributor to the periodical literature of the subject. Dr. Black is survived by his wife, two sons, Dr Carl E. Black, Jacksonville, Ill., and Dr. Arthur D. Black, Chicago, and two daughters.

Joseph John Higgins, M.D. College of Physicians and Surgeons in the City of New York, 1892; aged 45; a Fellow of the American Medical Association and New York Academy of Medicine; clinical professor of surgery in Fordham University, New York City; attending surgeon to Fordham Hospital; visiting surgeon to St. Vincent's Hospital, New York City; and consulting surgeon to St. Mary's Hospital, Waterbury, Conn.; died at his home in New York City, August 22, from nephritis.

Louis Huber Schultz, M.D. Medical College of Ohio, Cincinnati, 1906; aged 31; a Fellow of the American Medical Association and a member of the Association of Military Surgeons of the United States; a prominent young practitioner of Denver; captain in the Medical Corps, Colorado National Guard; while returning from a professional call in Aurora, a suburb of Denver, August 14, was struck by lightning and was found dead in a shallow irrigating ditch.

Charles W. Norris, M.D. Hahnemann Medical College, Chicago, 1883; Louisville, Ky., Medical College, 1894; aged 54; a Fellow of the American Medical Association; a well-known eye, ear, nose and throat specialist of Lexington, Ky.; died in his apartments in that city, August 13. At a special meeting of the Fayette County Medical Society, resolutions of esteem and of regret were unanimously adopted.

Charles Otto Maisch, M.D. Bellevue Hospital Medical College, 1891; aged 47; a Fellow of the American Medical Association and of the New York Academy of Medicine, of Port Washington, L. I.; lecturer on intubation and tracheotomy in the New York Post-Graduate Medical School; attending physician to the New York Post-Graduate and the German hospitals; died in the latter institution, August 19

Joseph Meyer, M.D. College of Physicians and Surgeons in the City of New York, 1877; aged 60; one of the organizers of the dispensary of St. Catherine's Hospital, Brooklyn, and for 37 years a member of the staff of that institution; also a member of the staff of the German, St. Patrick's, Blackwell's Island and the Post-Graduate hospitals, New York City; died in St. Catherine's Hospital, August 15.

Joseph Lawrence Hicks, M.D. College of Physicians and Surgeons in the City of New York, 1860; aged 81; one of the oldest practitioners of Long Island; surgeon of the First New York Infantry, U. S. V., during the Civil War; one of the organizers of the Flushing Hospital and a member of its staff until his retirement from practice in 1913; died at his home at Flushing, N. Y., August 19, from pleurisy.

Abraham Mayer, M.D. College of Physicians and Surgeons in the City of New York, 1876; aged 61; a Fellow of the American Medical Association and the New York Academy of Medicine; visiting physician to the Lebanon Hospital and consulting physician to the Jewish Maternity Hospital, New York City; died at his summer home, in Allenhurst, N. J., August 20, from heart disease.

Benjamin Edward Dolphin, M.D. College of Physicians and Surgeons in the City of New York, 1894; aged 37; a Fellow of the American Medical Association and the New York Academy of Medicine, and a member of the American Urological Association; a member of the staff of the New York Post-Graduate Hospital; died at his home in New York City, August 21.

George E. McNeil, M.D. Beaumont Medical College, St. Louis, 1890; aged 51; a Fellow of the American Medical Association; for twenty-five years house surgeon of the Missouri, Kansas and Texas Railway Hospital, Sedalia, Mo.; a member of the board of directors of the Sedalia Public Library; died at his home in Sedalia, August 13, from abscess of the lung.

Sylvester Bachman Weaver, M.D. Hahnemann Medical College, Philadelphia, 1872; aged 67; a practitioner of Littlestown, Pa., for forty-two years; president of the town council and borough school board and a director of the Littlestown Savings Institution; died at his home at Littlestown, August 20, from valvular heart disease.

Alexander Montgomery, M.D. Washington University, St. Louis, 1856; aged 81; for eighteen years a vaccine physician of the health department of St. Louis; surgeon of U. S. Volunteers throughout the Civil War; for three-quarters of a century a resident of Carondelet, St. Louis; died at his home August 12, from senile debility.

Segrid Helgesen, M.D. Minneapolis College of Physicians and Surgeons, 1894; aged 60, of Templeton, Calif.; a member of the Medical Society of the State of California; died at his home at Templeton, August 13, from the effects of an automobile accident on the Cuesta grade in San Luis Obispo County.

James Francis Harrison, M.D. University of Virginia, Charlottesville, 1873; aged 64; professor of chemistry and pharmacy in the Medical Department of the University of Alabama, Mobile, with which he had been connected for 42 years; died at his home August 18, from a general breakdown.

James L. Wheaton, M.D. Berkshire Medical College, Pittsfield, Mass., 1847; aged 92; a practitioner of Pawtucket for sixty-eight years, and representative from North Providence to the Rhode Island Legislature in 1857 and 1858; died at the home of his son in Pawtucket, R. I., August 12.

John Hayes Richardson (license, years of practice, Michigan); aged 89; for fifty-nine years a practitioner of Niles, Mich.; city recorder for several years and superintendent of the Barren Lake Water Company; died at his home in Niles, August 14, from senile debility.

Henry Evans Washburn, M.D. Indiana University, Indianapolis, 1910; aged 31; a member of the Indiana State Medical Association, of Clinton, Ind.; while visiting in Springfield, Ohio, was taken ill with pneumonia and died in the Springfield Hospital, August 17.

George Gillette Chittenden, M.D. Rush Medical College, 1879; aged 59; for many years a practitioner of Janesville, Wis.; but since 1914 a resident of Twisp, Wash.; while attempting to stop a runaway team August 6, died suddenly from heart disease.

Martin Bernard Roddy, M.D. Baltimore Medical College, 1909; aged 29; a Fellow of the American Medical Association and an esteemed practitioner of Lynn, Mass.; died in the Lynn Hospital, August 12, two days after an operation for appendicitis.

Patrick Henry Kelly, M.D. Rush Medical College, 1892; aged 52; a Fellow of the American Medical Association; a prominent practitioner of Chillicothe, Ill.; died in St. Francis Hospital, Peoria, August 14, from disease of the stomach.

Nathan Holmes (years of practice, Illinois, 1878); aged 73; of Delavan, Ill.; a member of the Illinois State Medical Society; formerly coroner of Tazewell county; died in the Peoria State Hospital August 13, from cerebral hemorrhage.

Henry D. Smith, M.D. Eclectic Medical Institute, Cincinnati, 1880; aged 61; a member of the Illinois State Medical Society; for thirty-five years a practitioner of Vandalia, Ill.; died at his home, August 7, from carcinoma.

James Edward Ivey, M.D. University of Nashville, Tenn., 1894; aged 61; a member of the Medical Association of Georgia; died suddenly August 13, at his home at East Rome, Ga., from heart disease.

Thomas Francis Aiken, Jr., M.D. University of Pennsylvania, Philadelphia, 1894; aged 45; for several years assistant surgeon of the Emergency Hospital, Boston; died at his home in that city, August 17.

William Alfred McCaslin, M.D. University of Michigan, Ann Arbor, 1874; aged 66; died at his home in Homestead, Pa., August 15, from cerebral hemorrhage, after an illness of twenty-three years.

Anthony B. Johns, M.D. Jefferson Medical College, 1857; at one time a member of the North Carolina Legislature from Rockingham County; died at his home in Leaksville, N. C., August 7.

John Lunsford McGill, M.D. Atlanta School of Medicine, 1910; aged 31; of Parrott, Ga.; a member of the Medical Association of Georgia; died at his home in Sylvester, Ga., August 11.

John Francis Conway, M.D. New York University, New York City, 1881; aged 60; for many years a practitioner of Brooklyn, died at the home of his daughter in that city, August 9.

George Asahel Barry, M.D. Eclectic Medical Institute, Cincinnati, 1905; aged 43; died at his home at Fort Wayne, Ind., August 8, from meningitis, following typhoid fever.

Howard George Bartlett, M.D. Long Island College Hospital, Brooklyn, N. Y., 1891; aged 45; died at his home at Maxwell, N. M., August 13, from cerebral hemorrhage.

Richard E. Bolling, M.D. University of the South, Sewanee, Tenn., 1900; aged 40; formerly of Redding, Calif.; died in Pasadena, Calif., July 16, from tuberculosis.

Benner Herbert Crosthwaite, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1879; aged 62; also a druggist; died at his home in Niles, Kan., August 5.

Charles Wesley Higgins, M.D. Bellevue Hospital Medical College, 1867; aged 74; died at his home in Salt Lake City, August 6, from cerebral hemorrhage.

Luella McKinley Derbyshire, M.D. Fort Wayne College of Medicine, Fort Wayne, Ind., 1888; aged 51; died at her home in Fort Wayne, August 18.

James Fred McBride, M.D. Jefferson Medical College, 1909; aged 30; of Sterling, Ill.; was killed in an automobile accident at Sterling, August 21.

Thomas S. Huffaker, M.D. Hahnemann Medical College, Chicago, 1884; aged 57; died at his home in Chicago, August 20, from cerebral hemorrhage.

Silas Jones, M.D. University of Maryland, Baltimore, 1875; aged 60; died at his home in Galion, Ohio, August 12, from valvular heart disease.

Kenneth McK. Clark, M.D. Baltimore, Maryland College, 1885; aged 53; of Kittrell, N. C.; died in a hospital in Richmond, Va., August 9.

Henry Beers Pinney, M.D. Miami Medical College, Cincinnati, 1874; aged 64; died at his home in San Francisco, August 12.

Ida Mae Wright, M.D. Hahnemann Medical College 1911; aged 43; died at her home at Evanston, Ill., August 5.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

GRANT'S EPILEPSY CURE*

Fred E. Grant sells a mail-order cure for epilepsy from Kansas City, Mo. According to the records, Grant was graduated by the Medical Department of the University of Michigan in 1877. Some years ago he seems to have practiced at Ottawa, Kan., moving to Kansas City, Mo., about 1900. THE JOURNAL has received inquiries regarding Grant's nostrum at various times during the last five or six years, some of them coming from physicians, others from laymen. A woman on the Pacific Coast wrote, in part:

> "Could you give me an analysis of the medicine used by Dr. Fred E. Grant for the cure of epilepsy? . . . I have been giving the medicine for some time to my daughter. Her general health has become very poor."

A Vermont physician writes that a patient had been taking Grant's nostrum for two years and says:

> "The family feel that she gets more relief from this than from any bromid mixture. However, it seems to me that it dulls her mind far more than a necessary dose of bromid should."

And this from a Providence, R. I., physician:

> "I saw this morning for the first time a girl of thirteen suffering from epilepsy. For two years she has taken medicine sent to her by Dr. Fred E. Grant, 520 to 538 Raymond Street, Kansas City, Missouri. The patient's mother tells me that two years ago, seeing Dr. Grant's advertisement in a magazine, she wrote to him, received a bottle of his medicine free of charge and a reference to a person in New Jersey. She wrote to New Jersey and received a letter saying that the doctor's medicine had cured the writer's little boy of epilepsy. Since this time, at $2 per bottle, the medicine has been procured from Dr. Grant.
>
> "The patient has been failing steadily mentally during this time and some weeks ago lay for three weeks in a stupor without moving a muscle, most of the time unconscious, and had to be fed artificially. The mother wrote to Dr. Grant telling him of this illness, and the Doctor wrote back that during this acute sickness it would be best to omit his medicine.
>
> "There was none of his preparation in the house this morning at the time of my visit, but I saw an empty bottle and the label on which it says that the preparation contains no opium or chloral. It also says that if the patient after taking the medicine some time becomes sleepy, has puffiness of the eyelids, eruption of the skin, and other strange symptoms to pay no attention to these signs, to continue the medicine and write to Dr. Grant.
>
> "Of course, the three weeks' stupor was the result of saturation with the quack's nostrum which is probably largely composed of bromids."

Grant's methods are common to those of advertising quacks. Advertisements in cheap magazines, especially those that circulate in rural districts, are the chief means whereby he gets in touch with his victims. An answer to the advertisement brings the usual circular letter, together with a batch of testimonials.

An original specimen of Grant's nostrum was submitted to the Association's laboratory, where it was subjected to analytical tests. The chemists reported:

CHEMISTS' REPORT

One original bottle of a remedy for epilepsy, manufactured by Dr. Fred E. Grant, Kansas City, Mo., was submitted to the Chemical Laboratory for examination. The bottle contained 460 c.c. (about 15½ fluidounces) of a brown liquid. The specific gravity of the liquid at 15.6 C. was 1.1149. Qualitative tests demonstrated the presence of alcohol, potassium, sodium, bromid and chlorid. Quantitative determinations yielded the following:

Alcohol (by volume)	1.50 per cent.
Potassium (K^+) (by weight)	4.57 per cent.
Sodium (Na^+) (by weight)	0.19 per cent.
Bromid (Br^-) (by weight)	9.76 per cent.
Chlorid (Cl^-) (by weight)	0.04 per cent.

The essential constituents of each 100 c.c. of the solution are approximately 15.8 gm. of potassium bromid and 0.9 gm. sodium bromid. Calculating from the bromid determinations, each teaspoonful (1 fluidram) contains the equivalent of 10.0 grs. potassium bromid, and each daily dose (7 teaspoonfuls) corresponds to 70.0 grs. potassium bromid.

The directions on the bottle call for Grant's cure to be given: "Two Teaspoonfuls after Breakfast and the Noon Meal. Three Teaspoonfuls On Retiring." This means that the victim is unknowingly taking the equivalent of seventy grains of potassium bromid daily and yet Grant has the impudent effrontery to say: "There is nothing injurious to the system in this medicine."

ARTICLES REFUSED RECOGNITION

Report of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's actions on articles refused recognition which were not deemed of sufficient importance to require lengthy reports.

Hydragogin

Hydragogin (C. Bischoff & Co., New York, selling agents) is advertised as "a most powerful diuretic and cardiac tonic." The composition given is:

> "Fifteen parts of the remedy contain 0.5 parts oxysaponin, 1.5 parts tincture of digitalis, 2.5 parts tincture of strophanthus, scillipicrin and scillitoxin, the active principles of scilla maritima, and alcohol."

It is not clear from this statement whether 15 parts of Hydragogin contain 2.5 parts of tincture of strophanthus, plus unspecified amounts of scillipicrin and scillitoxin, or 2.5 parts of a mixture, in unspecified proportions, of tincture of strophanthus, scillipicrin and scillitoxin. The activity of strophanthus, after it enters the blood stream, is about fifty times that of digitalis; hence, if the former proportion is the true one, in giving an amount of Hydragogin which ensures the full therapeutic effect of the digitalis, one would administer an almost certainly fatal amount of strophanthus. Whatever the proportion of strophanthus may be, however, the administration of a mixture of digitalis and strophanthus in fixed proportions is indefensible. At times it is advisable to follow one of these drugs with the other in the treatment of cardiac disease. The simultaneous administration of the two continuously in fixed proportions, however, is injudicious, because of the great difference between their rates of absorption and in their activity after they enter the blood stream. The action of digitalis, moreover, persists much longer than does that of strophanthus.

An advertising circular contains the following claim:

> "The well-known diuretic properties of digitalis, strophanthus and squills are greatly enhanced by the addition of the oxysaponin."

This is not true. Saponins are not synergistic with digitalis therapeutically; on the contrary, they exert a purely deleterious action on the heart when they enter the circulation.

The symptoms of cardiac disease are often difficult to distinguish from the toxic actions of the digitalis bodies. Since these bodies must often be given to the point of beginning toxic action in order to induce the full therapeutic effects, it is obvious that the administration of a mixture of digitalis, strophanthus, saponin and active principles of squill is especially liable to induce serious toxic effects which cannot be distinguished from the symptoms of the disease

Hydragogin is a shotgun mixture of semisecret composition; it is marketed under a therapeutically suggestive name,

* This article is one of sixteen that appear in the pamphlet "Epilepsy Cure Frauds," price 10 cents.

and advertised by means of unwarranted therapeutic claims. It is therefore in conflict with Rules 1, 6, 8, and 10. The Council held Hydragogin ineligible for New and Nonofficial Remedies.

Williams' Syrup of Malt

Williams' Syrup of Malt (The American Malt Extract Co., San Francisco) is essentially a simple malt extract. It is evident, therefore, that the following claim, which appears on the trade package, is without warrant:

"As a tonic and tissue builder it is invaluable. Especially beneficial in cases of diabetes, consumption, kidney, liver and stomach troubles."

Also, the following claims, which appear in a circular:

"Williams' Syrup of Malt is a powerful agency for *Building Tissue*."
"When indicated with Nursing Mothers it stimulates the Mammary Glands and not only increases the quantity of milk, but enriches the quality."
"We also emphasize its beneficial qualities in the incipient stages of tubercular diseases and for stomach disorders and Diabetic conditions."

The Council held Williams' Syrup of Malt ineligible for N. N. R. because it is essentially an official preparation sold under an unofficial title (see N. N. R., 1915, p. 14); because unwarranted therapeutic claims are made for it and because the claims made are apt to lead the public to depend on it as a curative agent in serious diseases.

Correspondence

Dermatology of the Ancients

AUGUSTA, GA., Aug. 20, 1915.

To the Editor:—The address of Dr. Howard Fox on this subject (THE JOURNAL, Aug. 7, 1915, p. 469) is fascinatingly interesting. Dr. Fox says:

"The question to be settled is whether the disease described by[?] Leviticus as Zaraath and translated as leprosy in the authorized version really refers to the modern disease leprosy, with which we are all familiar."

For years the thirteenth chapter of Leviticus has worried me. I studied it in the original Hebrew and could not, in spite of the authorized versions, Latin, English and German, reconcile myself that Zara'ath (צרעת) is leprosy as it is known to us today.

To my mind it is a contagious skin lesion, a dermatitis; an *Ausschlag*, rather than *Aussatz*, and the "white spots" might as well indicate another species of skin eruption.

Moses, who was undoubtedly a great sanitarian and investigator, would have given a more detailed description of this dreaded malady had it been genuine leprosy, and would not have treated it so lightly. While isolation is one of the great preventives even today, that alone could not have cured leprosy in seven days as we read in the case of Miriam, the sister of Moses and Aaron. Neither could Naaman, the Syrian, be cured of leprosy by simply bathing in the river Jordan.

One of the greatest of Hebrew scholars and Bible critics, Eben Ezra of Spain, (twelfth century), believes the term Zara'ath to be synonymous with Zir'ah (צרעה), the wasp, supposedly resembling the bite and its consequent developments. Onkelos in his Aramaic translation of the Hebrew Scriptures (Targum), translates Zara'ath, *segirutho*, *detention*, or "lock-up-case." The translation of bahereth "bright spot" is erroneous; it is a macule, and may be white or reddish, as we find it qualified in the nineteenth verse of the same chapter. Neither is it so sure that sapachath (ספחת) is a "scab;" not if we consider the word etymologically.

There is one passage in the Bible which points more to leprosy than any other; it reads as follows: "The Lord shall smite thee with bad ulcers (sh'hin ra) in the knees and on the legs, that cannot be healed, from the sole of thy foot unto the top of thy head" (Deut., xxviii). This sh'hin ra is referred to in a previous verse in the same chapter, as *Sh'hin Mizray'im*, a peculiarly Egyptian skin disease which was considered incurable.

(שחין מצרים אשר לא תוכל להרפא)

I believe with S. Pruner, (Tobler, Medic. Typog. von Jerusalem) that this malignant disease, "the Egyptian Sh'hin that could not be healed" which affects not only the knees but the whole body, is lepra tuberosa.

In that lengthy thirteenth chapter of Leviticus is also mentioned *Zara'ath nosheneth*, a chronic Zara'ath, but not a word of its symptoms, anesthesia and falling off of the phalanges of the fingers or toes; hence I doubt that Zara'ath was intended for leprosy as we know it.

LEO REICH, M.D.

Scope of Paper by Kleiner and Meltzer

To the Editor:—At the April meeting of the National Academy of Sciences, Dr. I. S. Kleiner and I presented a communication entitled "Retention in the Circulation of Dextrose in Normal and Depancreatized Animals, and the Effect of an Intravenous Injection of an Emulsion of Pancreas upon This Retention." This paper was published in the June issue of the *Proceedings of the National Academy of Sciences*, a publication which has only a small circulation. A few weeks ago we were surprised to find an article in the New York *American* stating that we have discovered the cause of diabetes and a cure for it. A day later a writer on foods published in an evening paper (in quotation marks) a statement, purporting to have been made by us: Glucose in its natural form may be detrimental, but when manufactured is often fatal. That article contains many other nonsensical remarks. I enclose a reprint of our paper in question. You will see that we make no claims whatsoever to having found the cause of diabetes or a cure for it. Nevertheless a statement to that effect was spread all over the United States, and we are now receiving numerous letters from physicians and laymen, begging to send them the cure or to tell them what the cause of diabetes is. Similar letters are received by the Rockefeller Institute and by the National Academy of Sciences.

We beg you, therefore, to publish in THE JOURNAL a statement that our paper *does not deal with the final cause of diabetes, nor does it even hint that we are on the way to find a cure for it.* We simply communicate there some scientific results which we have obtained in the course of a long series of experiments upon animals, without any reference to the practical applicability of these results.

S. J. MELTZER, M.D., New York.
The Rockefeller Institute for Medical Research.

Pilocarpin in Trifacial Neuralgia

To the Editor:—A man, aged 74, had had trifacial neuralgia for seven years. It was not very severe until about six months before I first saw the patient, at which time the acts of speaking and swallowing began to cause him great pain. The pain was supra-orbital. A tenacious mucus constantly collected in the mouth and fauces. Swallowing was impossible, and efforts at getting the mucus from the mouth were so painful as to give the patient scarcely any rest during the day time; at night, however, he could sleep. After a while I took a hint from the collection of mucus, and gave him pilocarpin, and soon after the full effects of the medicine were present the pain lessened, the tongue, which had been thickly coated, cleared up, and the mucus entirely disappeared. Notwithstanding that the parts were bathed in the mucus, the patient complained of a dry burning sensation in mouth and throat. I have wondered if it may not be that in this disease, for which no cause is known, some oral infection may be manifesting itself in supra-orbital pain. In this case all of the symptoms left the man. It was a symptomatic cure. He may have other attacks, but if pilocarpin will handle them as promptly as it seemed to handle this attack, the disease is rendered less formidable at least. Logically and pharmacologically it was sensible treatment, and it seems worth a trial in all such cases.

J. L. TRACY, M.D., Toledo, Ohio.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

COMPOSITION OF THE ROUX STAIN

To the Editor:—Please give the following data concerning the Roux stain: Composition, staining qualities, bacteria taking stain and technic of stain.

F. L. Rogers, M.D., Long Beach, Calif.

Answer.—The Roux stain, described by Roux and Yersin (*Ann. de l'Inst. Pasteur*, 1890, iii, 385) is a special double stain for diphtheria bacilli, and is prepared according to the following formula:

Dahlia or gentian violet	0.5 gm.
Methyl green	1.5 gm.
Distilled water	200 c.c.

When staining cover glass preparations fix and dry in air, stain from five to ten seconds, wash in water, dry and mount in xylene balsam. Sections of tissue should remain in the stain for twelve hours. They are then washed thoroughly in water, dehydrated and mounted in the usual way.

This stain has no practical value except in the examination for diphtheria, and even then it has no advantages over the Gram stain.

ARTICLES ON PARATYPHOID FEVER

To the Editor:—Please give references to the literature on paratyphoid fever.

J. P. S., Ohio.

Answer.—

Freund, H.: Clinical Course of Paratyphoid B. Infections, *Deutsch. Arch. f. klin. Med.*, cvii, No. 4; abstr., The Journal, Oct. 12, 1912, p. 1412.

Unterberger, S.: Paratyphoid, *St. Petersb. med. Zeitschr.*, Oct. 14, 1912.

Guthrie, J. B.: Paratyphoid Cholecystitis with Report of Case, *New Orleans Med. and Surg. Jour.*, January, 1913.

Richards, E. T. F.: Bacteriology of Epidemic of Paratyphoid Fever, *Journal-Lancet*, Feb. 15, 1913; abstr., The Journal, March 8, 1913, p. 781.

Hay, J.: Paratyphoid Fever, *Med. Press and Circ.*, May 7, 1913.

Job, E.: Paratyphoid Infection, *Rev. de méd.*, March, 1913; abstr., The Journal, May 24, 1913, p. 1671.

Hunt, C. J.: Paratyphoid Fever; A Serologic Study in Relation to the Epidemiology, *Arch. Int. Med.*, July, 1913, p. 64; abstr., The Journal, Aug. 9, 1913, p. 432.

Crafton, W. M.: Two Cases of Paratyphoid Bacillus Infection Treated with Vaccine, *Brit. Med. Jour.*, Nov. 22, 1913.

Muller, R.: Paratyphoid Epidemic from Eel Meat, *München. med. Wchnschr.*, March 3, 1914.

Heigel, A.: Infections with Bacteria of Paratyphoid Group, *Wien. klin. Wchnschr.*, Jan. 21, 1915; abstr., The Journal, March 6, 1915, p. 865.

Lagane, L.: Diagnosis of Paratyphoid Fever, *Presse méd.*, March, 27, 1915.

Walker, E. W. A., and Gibson, A. G.: Typhoid and Paratyphoid Infection, *Lancet*, London, March 27, 1915; abstr., The Journal, April 24, 1915, p. 1454.

Bristol, L. D.: Paratyphoid Fever with Report Including Postmortem Examination of Fatal Case of "A" Type, The Journal, April 4, 1914, p. 1078.

Canavan, M. M.: Relation of Paratyphoid to Antityphoid Vaccination, *Boston Med. and Surg. Jour.*, Oct. 8, 1914.

Landouzy, L.: Typhoid and Paratyphoid Fever; Prophylaxis and Treatment, *Presse méd.*, Dec. 3, 1914; abstr., The Journal, Feb. 6, 1915, p. 546.

Ichikawa, S.: Abortive Treatment of Typhoid and Paratyphoid, *Sci-I-Kwai Med. Jour.*, December, 1914; abstr., The Journal, Feb. 6, 1915, p. 546.

Von Wilucki: Advantages of Bolus Alba in Treatment of Paratyphoid, *München. med. Wchnschr.*, Dec. 8, 1914.

Sawasaki, H.: Pathologic Anatomy of Paratyphoid B. Infection, *Mitt. a. d. Med. Fakultät der k. Univ. Tokyo*, 1915, xiii, No. 2.

FRENCH PROOF AGAR

To the Editor:—Can you furnish me with the formula for making "French proof agar?" This culture medium was mentioned in a paper on the vaccine treatment of tinea tonsurans which appeared in The Journal of July 17. As I have several cases of ringworm which have resisted all treatment, even the Roentgen ray, I am anxious to give the new method a thorough trial and add my confirmatory evidence if possible to its efficiency.

Roy A. T., M.D., New York.

Answer.—The formula for French proof agar is:

Maltose	20 gm.
Peptone	2.5 gm.
Agar	7.5 gm.
Water	500 c.c.

The reaction should be slightly acid, and the agar should be placed in flasks about 1 inch deep.

LITERATURE OF HELIOTHERAPY IN TUBERCULOSIS

To the Editor:—Please give references to Rollier's method of sunlight treatment of tuberculosis.

Lawrence Jacobius, M.D., New York.

Answer.—Following is a partial list of articles which may be consulted:

Dietrich, Henry: Heliotherapy, with Special Reference to the Work of Dr. Rollier at Leysin, The Journal, Dec. 20, 1913, p. 2229.

Rollier, A.: La cure de soleil, Paris, Baillière.

Redard, P.: Advantage of Orthopedic Appliances in Connection with Sunlight Treatment of Surgical Tuberculosis, *Ann. de méd. et chir. inf.*, May 1, 1914.

Hussy, A.: Sunlight Plus Mountain Climate in Treatment of Tuberculosis of Hand, *Beitr. z. klin. Chir.*, May, 1914; abstr., The Journal, Sept. 12, 1914, p. 977.

Kisch, E., and Gratz, H.: Tuberculous Fistula Cured by Exposure to Direct Sunlight, *Arch. f. klin. Chir.*, 1914, civ, No. 2; abstr., The Journal, June 6, 1914, p. 1850.

Twichell, D. C.: Effect of Direct Rays of Sun on Experimental Tuberculosis, *New Mexico Med. Jour.*, January, 1915.

Johansson, S.: Heliotherapy of Surgical Tuberculosis, *Hygiea*, Stockholm, lxxvi, No. 24; abstr., The Journal, March 6, 1915, p. 868.

Kime, J. W.: Heliotherapy in Treatment of Tuberculosis, *Iowa State Med. Soc. Jour.*, April, 1915.

Hinsdale, G.: Surgical Tuberculosis and Its Treatment by Heliotherapy, *Brit. Jour. Tuberc.*, April, 1915.

Brinch, T.: Treatment of Internal Tuberculosis with Stored Light Rays, *Ugesk. f. Lager*, Nov. 27, 1913; abstr., The Journal, Jan. 10, 1914, p. 174.

THE MEDICAL RESERVE CORPS

To the Editor:—My attention has been invited to The Journal, Aug. 21, 1915, containing, on page 733, a reply to a letter of inquiry in which the following questions are asked: "Who and where is the official head of our Medical Reserve Corps? What are the requirements for appointment to the service, and how are appointments obtained? What military rank and what pay, if any, does such appointment carry with it?"

In your reply you have made no reference to the Medical Reserve Corps of the Navy. Believing that this was an oversight, I desire to invite your attention to the fact that there is a Medical Reserve Corps of the Navy, under the administration of the Navy Department, of which the Surgeon-General of the Navy is the official head, based on the same law which provides a Medical Reserve Corps of the Army, and that full information may be obtained by any person interested in this subject who will address the Surgeon-General of the Navy, Washington, D. C.

W. C. Braisted, Washington, D. C.
Surgeon-General, U. S. Navy.

LITERATURE ON MIGRAINE

To the Editor:—Please print a list of recent articles on migraine.

J. D.

Answer.—The following is a partial list of books and articles which may be consulted:

Flatau, Edward: Die Migräne, Berlin, Julius Springer, 1912, price 12 marks.

Auerbach, Sigmund: Headache, Its Varieties, Their Nature, Recognition and Treatment: A Theoretical and Practical Treatise for Students and Practitioners, translated by Ernest Playfair, London, Oxford University Press, 1913, price $1.50.

Caesar, G.: Migraine, *Med. Klin.*, Jan. 12, 1913; abstr., The Journal, Feb. 22, 1913, p. 635.

Charles, J. R.: Pathology of Migraine, *Practitioner*, London, September, 1913.

Alexander, E. W.: Case of Ophthalmic Migraine, *California State Jour. Med.*, November, 1913.

Trangott, R.: Periodical Recurrence of Migraine, *Med. Klin.*, April 12, 1914.

Campbell, G.: Treatment of Migraine, *Jour. Mississippi State Med. Assn.*, October, 1914; abstr., The Journal, Nov. 14, 1914, p. 1791.

COUNTRY PRACTITIONERS PLEASE NOTICE

To the Editor:—The undersigned, for the purposes of a paper on the midwife question in America, is very anxious to get information relative to the number of midwives in country (farming, lumber, mining) districts, in small villages and towns.

Would the doctors in such districts, villages and towns kindly jot down on a postal card answers to the following questions and mail to me?

1. How many midwives practice in your vicinity?
2. Do you consider the midwives a necessity in your neighborhood?

Any other information will be gratefully received.

Joseph B. De Lee, M.D., 5028 Ellis Avenue, Chicago.

INFORMATION REGARDING PUBLIC HEALTH SERVICE

To the Editor:—To whom shall I write to obtain information in regard to obtaining a position in the U. S. Public Health Service?

R. M. C., M.D.

Answer.—Rupert Blue, Surgeon-General, U. S. Public Health Service, Washington, D. C.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, October 5-6. Sec., Dr. John Wix Thomas, 209 National Bank of Arizona Bldg., Phoenix.

COLORADO: Denver, October 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, October 12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

GEORGIA: Atlanta, October 12. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Wallace, October 5. Sec., Dr. C. A. Dettmen, Burke.

ILLINOIS: Chicago, October 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

KANSAS: Topeka, October 12-14. Sec., Dr. H. A. Dykes, Lebanon.

MASSACHUSETTS: Boston, September 14-16. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

MICHIGAN: Lansing, October 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, October 5-8. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSOURI: Kansas City, September 28-30. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

MONTANA: Helena, October 5. Sec., Dr. William C. Riddell, Helena.

NEW HAMPSHIRE: Concord, September 15-16. Sec., Dr. Walter T. Crosby, Pembroke Bldg., Manchester.

NEW YORK: Albany, Buffalo, New York, Syracuse, October 5-8. Mr. Harlan H. Horner, Chief; Examination Division, State Education Bldg., Albany.

OKLAHOMA: Oklahema City, October 12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, October 4. Sec., Dr. Quevedo Baez, Allen St., San Juan.

RHODE ISLAND: Providence, October 7-8. Sec., Dr. Gardner T. Swarts, State House, Providence.

UTAH: Salt Lake City, October 4-5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WYOMING: Laramie, October 13-15. Sec., Dr. H. E. McCollum, Laramie.

Medical Education in Japan

A report from the Department of Education, Tokyo, Japan, states that there are altogether nineteen medical colleges. These institutions are:

GOVERNMENT MEDICAL COLLEGES

1. Tokyo Imperial University, Medical College* ..... Tokyo
2. Kyoto Imperial University, Medical College* ..... Kyoto
3. Kyushu Imperial University, Medical College* ..... Fukuoka
   (Formerly a part of the Kyoto Imperial University)
4. Tohoku Imperial University, Medical College* ..... Sendai
5. Tohoku Imperial University, Special Medical Department ..... Sendai
   (This is a reorganization of the old Sendai Special Medical School. Made a part of Tohoku Imperial University in March, 1912, under the present title.)
6. Chiba Special Medical School ..... Chiba
7. Kanazawa Special Medical School ..... Kanazawa
8. Nagasaki Special Medical School ..... Nagasaki
9. Niigata Special Medical School ..... Niigata
10. Okayama Special Medical School ..... Okayama
11. Taiwan (Formosa) Medical School† ..... Tansui, Taiwan

PUBLIC MEDICAL SCHOOLS

12. Aichi Prefecture, Special Medical School ..... Nagoya
13. Kyoto Prefecture, Special Medical School ..... Kyoto
14. Osaka Prefecture, Higher Medical School* ..... Osaka

PRIVATE MEDICAL SCHOOLS

15. Tokyo Charity Hospital, Special Medical School ..... Tokyo
16. Kumamoto Special Medical School ..... Kumamoto
17. South Manchuria Medical School ..... Mukden
18. Nippon Special Medical School‡ ..... Tokyo
19. Tokyo Woman's Special Medical School‡ ..... Tokyo

* For admission, require graduation from the "third department of the higher schools," which covers three years of premedical training following graduation from the middle schools.

† A medical school conducted by the Japanese government, primarily for the aborigines of Taiwan (Formosa). Only a common school education required for admission. Graduates licensed only to practice in Taiwan.

‡ Graduates not licensed by the Japanese government unless they pass a special examination.

As will be noted in the foregoing list, there are eleven government institutions, three public (prefecture) institutions and five private medical schools. The course in all these extends over four years. There is a decided difference, however, in the entrance requirements. The Taiwan (Formosa) Medical School requires only graduation from the Taiwan public schools, and is conducted for the aborigines. The medical colleges of the Imperial Universities (the first four in the list) and the Osaka Prefecture, Higher Medical School, require, in addition to graduation from the middle schools of Japan, three years of higher premedical training in, and graduation from, what is referred to as the "third department of the higher schools." All others require for admission only graduation from the middle school, which is equal to about the tenth or eleventh grade in the better high schools of this country. The medical colleges of the Imperial Universities at Tokyo, Kyoto, Fukuoka and Sendai, therefore, and the Osaka Prefecture, Higher Medical School, are the only ones which, so far as entrance standards are concerned, would equal the medical schools in the United States which require one or more years of collegiate work for admission. All are fully recognized by the government of Japan, except the Taiwan Medical School, the Nippon Special Medical School and the Tokyo Woman's Special Medical School. To obtain the government's permission to practice, graduates of these three colleges must first pass a rigid examination.

It is to be noted that educational requirements for the practice of medicine in Japan are not as high as in the twenty-eight states in this country, which require in addition to graduation from a four year high school, one or two years of collegiate education.

California Reciprocity Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports that thirty-nine candidates were licensed through reciprocity from January to April 16, 1915. The following colleges were represented:

College	Year Grad.	Reciprocity with
University of Colorado	(1911) (1913) (1914)	Colorado
Chicago College of Medicine and Surgery	(1914, 2)	Illinois
College of Physicians and Surgeons, Chicago	(1886) (1909)	Illinois
Northwestern University	(1911)	Illinois
Rush Medical College	(1884) (1909) (1912)	Illinois
Keokuk Medical College	(1891)	Iowa
Kansas Medical College	(1913)	Kansas
Kentucky School of Medicine	(1896)	Indiana
University of Louisville	(1894)	Indiana
Tulane University of Louisiana	(1899) (1911) (1914)	Louisiana
College of Physicians and Surgeons, Baltimore	(1883) (1896)	New Mexico Minnesota
Harvard University	(1897) (1905)	Mass.
Detroit College of Medicine	(1890)	Illinois
University of Michigan, Medical School	(1903)	N. Dakota
Minneapolis College of Physicians and Surgeons	(1902)	Minnesota
Kansas City Hahnemann Medical College	(1909)	Oklahoma
St. Louis University	(1913)	Missouri
John A. Creighton Medical College	(1896)	Nebraska
University and Bellevue Hospital Medical College	(1902)	New York
University of Buffalo	(1899)	New York
Cleveland College of Physicians and Surgeons	(1905)	Ohio
Ohio Medical University	(1904)	Nevada
Western Reserve University	(1899)	Ohio
Medico-Chirurgical College of Philadelphia	(1899)	Penna.
Temple University	(1911)	Penna.
University of Pennsylvania	(1911)	Penna.
University of Pittsburgh	(1910)	Penna.
Woman's Medical College of Pennsylvania	(1904) (1913)	Dist. Colum. Maryland

Nebraska May Report

Dr. H. B. Cummins, secretary of the Nebraska State Board of Health, reports the written examination held at Lincoln, May 12-13, 1915. The total number of subjects examined in was 12; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 45, of whom 43 passed and 2 failed. Eight candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Grand Rapids Medical College	(1907)	80.2
Cotner University	(1915) 76.2, 76.4, 80.4, 82, 85.5	
John A. Creighton Medical College	(1914) 79; (1915) 77.1, 77.5, 77.5, 79.2, 79.7, 79.7, 80.5, 80.6, 80.6, 80.9, 81, 81.1, 81.1, 81.1, 81.2, 81.5, 81.5, 81.6, 82, 82.1, 82.2, 82.2, 82.2, 82.5, 83, 83, 83.6, 83.6, 84.5, 84.5, 84.7, 84.9, 85.4, 85.5, 87.1.	
University of Nebraska	(1915)	80

FAILED

College	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery	(1914)	64.9
Cotner University	(1914)	73

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery	(1913)	Illinois
Northwestern University	(1904)	Iowa
Reliance Medical College	(1909)	Illinois
Rush Medical College	(1913, 2)	Illinois
University of Maryland	(1907)	Maryland
National University of Arts and Sciences	(1912)	Missouri
University Medical College, Kansas City	(1910)	Missouri

Book Notices

THE OPERATIVE TREATMENT OF CHRONIC INTESTINAL STASIS. By Sir W. Arbuthnot Lane, M.S., F.R.C.S., Senior Surgeon at Guy's Hospital. Third Edition. Cloth. Price, $4. Pp. 201, with 102 illustrations. Chicago: Chicago Medical Book Company, 1915.

There are six chapters to this work, but only one is devoted to the subject-matter as defined by the title. In this, the first chapter, the author attempts to show that the various peritoneal folds and bands found in the abdominal cavity, which in a sense are considered as abnormal, are "crystallized resistances," or "the crystallization of lines of force," whatever that means, the result of an attempt on the part of Nature to hold up the intestines, which have a tendency to fall on account of man's assuming the erect position. If this be the correct explanation of their origin, one would expect to find at this stage of evolution these bands quite universally present, rather than being the exception in normal healthy individuals; and if they have developed for the sole purpose of preventing the downfall of the intestine, they should be a benefit to the individual rather than a detriment. On this point the author says, "These bands illustrate the fact that while the earlier efforts of Nature to help are to some extent efficient and advantageous to the individual, they all finally act to the detriment of the function they were originally intended to benefit." This means that man, as a penalty for assuming the erect position, is doomed to extinction, for the structures necessary to hold up his bowel lead to his destruction, unless some enterprising surgeon remove his bowel first. It is interesting to learn that practically all the ills to which flesh is heir are due to chronic intestinal stasis because man presumed to stand erect. Some of the penalties for this presumption are loss of hair in one case, with too much hair on the face and body in another; all kinds of skin diseases; loss of fat, causing ptosis of all of the abdominal and pelvic organs; ulcer of the duodenum; ulcer of the stomach; carcinoma of the stomach; gallstones; carcinoma of the pancreas; diabetes; disease of the suprarenals; diseases of the thyroid; heart disease; wasting of the muscles; scoliosis; flatfoot; knock knee; nervous and mental diseases; melancholia and imbecility; adenoids; enlarged tonsils; glands of the neck; arthritis ("Rheumatoid arthritis, like tubercle, is never present except in association with autointoxication due to chronic intestinal stasis"), and other things too numerous to mention. Without intestinal stasis, no diseases of women: "If women were not imperfectly drained, the gynecologist would not have been evolved." There seems to be one ray of hope: the red-headed girl is immune, and her "resisting power varies directly with the distribution and with the intensity of the redness of the hair." And what a sad ending to it all, for "cancer is the last chapter in the three-volume story of chronic intestinal stasis." However, do not be downhearted: the gloom of this recital is quickly dispelled by the magic word Colectomy. "It will be well to remember that while the surgeon should not have recourse to operative measures till all simpler treatment has failed, the earlier colectomy is performed in the history of the disease, the better is the result. The youngest patients get by far the most out of the operation. . . . I prefer, if circumstances will permit, to remove the entire large bowel, except a sufficient proportion of the pelvic colon." There is one exception to the necessity for doing colectomy. Pregnancy sometimes cures. This seems to be the case particularly if the girl is unmarried. "It is in this manner that a toxic, thin, miserable girl may be converted into a plump, clean, happy one by a pregnancy. It would seem almost justifiable in an unmarried girl in certain circumstances to resort to a pregnancy rather than to operative interference. This course has, however, distinct and obvious objections in our present state of civilization." [Sic.] Let us hope that the present state of civilization will continue, so far as this point is concerned. The chapter closes with a brief partial report of three or four cases in which colectomy had been done.

Chapter II is on "The Investigation of Chronic Intestinal Stasis by the X-Rays," by Alfred C. Jordan, M.D. Chapter III is on "The Bacterio-Chemistry of the Small Intestine," by Dr. Nathan Mutch. This is very brief and covers less than five pages. Chapter IV is an extract from a work on diseases of the heart by James Mackenzie, entitled "X Disease," while Chapters V and VI, by the author, on "A Remarkable Example of the Manner in which Pressure Changes in the Skeleton May Reveal the Labor History of the Individual" and "The Anatomy and Physiology of the Shoemaker" are taken from the *Journal of Anatomy and Physiology* of 1886 and 1887, and have nothing to do with the subject-matter of the work; furthermore, much of the matter and all of the illustrations in these two chapters are used in the first chapter. The last three chapters could have been well dispensed with, and the space used to much better advantage to give in detail reports of the cases in which the author has done this operation, with the mortality and the end-results; all of which much needed information to carry conviction is entirely lacking.

HUMAN MOTIVES. By James Jackson Putnam, M.D., Professor Emeritus, Diseases of the Nervous System, Harvard University. Cloth. Price, $1. Pp. 179. Mind and Health Series. Boston: Little, Brown & Co., 1915.

The author, known for his recent freudian leanings and certainly the most philosophic of all English-speaking disciples of the new school of psychology, attempts an analysis of human motives through freudian eyes. He sees, "gleaming through our immediate and partial motives, a background of stronger tendencies from which these motives derive their main significance." He believes, first, "that men are more strongly bound than they usually recognize, by a sense of obligations definable as 'ideal.' Whatever name one may choose for these ties, they are virtually religious in their nature, and the recognition of them often gives rise to a feeling of new birth. The sense of these obligations, even though unacknowledged or denied, makes itself felt through the host of lesser motives." In the second place, according to Putnam, "men are handicapped by passions, longings, personal ambitions, cravings for success and mastery, to a degree of which they are never wholly conscious." Throughout this book the author utilizes two modes of approach to the study of human motives—the philosophic and the psychanalytic methods. The subject is discussed under the topics: main sources of motives, the rational basis of religion, the psychanalytic movement, the educational bearings of psychanalysis, instinct and ideals, and an attempt at synthesis. Without attempting a discussion of the views expressed in this little volume, we believe the reader will find in it much food for reflection. The subject itself has been treated from a high plane of thought; and opponents of Freud's doctrines will seek in vain for weak spots wherein to send their arrows of personal criticism. In all his utterances this author commands the highest respect, and any criticism must be limited to the principles which he advocates.

THE INSANITY OF YOUTH AND OTHER ESSAYS. By Bayard Holmes, B.S., M.D. Boards. Price, $1. Pp. 222. Cincinnati: Lancet-Clinic Publishing Company, 1915.

This small volume contains a number of essays which have been published from time to time in the *Lancet-Clinic*. For the most part they are polemic in character and propagandist in nature. So imbued is the author with the idea that all disease has a physical basis that he has become impatient with psychology as explaining anything in medicine excepting the peculiar unproductiveness of mental medicine. The essays give one the impression that the author believes everything which emanates from certain German laboratories, while persistently denying the great value of psychologic observation in the domain of psychiatry.

SLEEP AND SLEEPLESSNESS. By H. Addington Bruce. Cloth. Price, $1. Pp. 219. Mind and Health Series. Boston: Little, Brown & Co., 1915.

The author has written quite a chatty little volume on sleep. We doubt not that its perusal will produce the desired somniferous effects.

Miscellany

"As to Medical Freedom"

The Lamar *Democrat* is published in Lamar, Mo., once a week. What follows is from an editorial that appeared in the issue of June 10, 1915. Those who read it will realize why it is unnecessary to make any comment:

Every week we read a journal that is devoted quite hotly to medical freedom. Judging from what this seven-day periodical of enlightenment has to say, we are in great danger of a vast medical trust, that will sit heavily and ruthlessly upon us, poisoning us with deadly serums and vaccines, gagging us with nauseous decoctions of mephitic herbs.

Is there really anything the matter with our present medical freedom in this country? Is there any damn fool "ism," any absurd claim, any sort of "Eny, Meny, Miney, Mo" business that we cannot try upon our diseased and tortured bodies if we are so minded?

Truth compels us to answer, None.

Consider for a minute what has been done by the regular school of medicine against which, in the name of freedom, we are so vociferously and so repeatedly warned. Then consider the achievements of the various schools cults, 'isms and creeds that would supplant this profession and consign it to forgetfulness.

The regular school of medicine is fallible. There are many things it cannot do. But it never ceases in its search for truth. The laboratory and the clinic room are its foundation and inspiration. Nothing is taken for granted. It bases its deductions upon scientific facts, that must overcome the combined force of prejudice, tradition and vested interest.

What has become of cholera? What has become of infant diarrhea? What has become of smallpox, once a terror equal to plague? What has become of diphtheria and membranous croup? Who is gradually conquering tuberculosis, the greatest of human plagues? Who has dissipated the dread specter of hydrophobia? Who achieved the marvels of modern surgery? Has it not been the school of regular medicine? One by one, hostile schools of healing have been reared to combat the ancient profession of Hippocrates. Where are they now? Only echo answers, Where?

Who is frantically and supplicatingly in demand upon those long battle lines in Europe? Is it chiropractics? Is it osteopaths? Is it Christian Science healers?

Those who seek to overthrow the regular practitioners found their assumptions upon a combination of superstition, and a wooden-faced denial of physical facts. They come and go like the passing seasons. They make no great scientific discoveries. They garner no tomes of physical knowledge. They are found in the end to be based upon pretence, gullibility, superstition and esoteric moonshine.

The regular school makes mistakes. It needs watching. It should never emerge to that haughty eminence where it will not receive its full quota of brain-clearing, humility-preserving kicks; but forget not, brethren, it is the salt of the earth, and suffering humanity's one dim and distant star of hope.

War Babies

Since the beginning of the European war, accounts, mostly of a sensational nature, have appeared regarding the excess of illegitimacy in the communities in England in or near which large bodies of enlisted men are encamped for war instruction purposes. The *British Medical Journal* says that many tales were told in most circumstantial detail which indicated that there would be thousands of illegitimate children born on account of lax conditions accompanying the mobilization of large bodies of men in military camps. For instance, it was reported that in one town of 18,000 inhabitants 2,000 girls were expecting war babies; another story was to the effect that in a certain maternity hospital fifteen new wards were to be provided. New stories appeared almost daily and the public was wrought up into a state of excitement and distress on account of this supposed condition of affairs. The confusion and excitement grew so that the Archbishop of Canterbury with a few representative persons formed a committee to investigate the alleged facts. The committee after inquiry reported that the sensational accounts as to the large number of "war babies" were without foundation. "The committee did not deny that there had been grave cause for anxiety on account of the prevalence of a low moral standard as well as on account of intemperance, which was often the result of thoughtless treating, nor did it deny that there had been much giddiness and foolish excitability among young girls which often led to undesirable conduct. The committee stated that everything it had learned pointed to the need of providing opportunities for wholesome recreation for the girls and also for the soldiers and sailors, but expressed the opinion that there was no reason to pass any harsh judgments on them or to distrust them in the future."

The Paramount Importance of Chemistry in Biologic and Medical Research

J. J. Abel, in an address delivered as the first Mellon Lecture at the Mellon Institute, Pittsburgh (Experimental and Chemical Studies of the Blood with an Appeal for More Extended Chemical Training for the Biological and Medical Investigator, *Science*, July 30 and Aug. 6, 1915, pp. 133 and 175), says:

"When I have the honor of being consulted by a young man who has not yet found himself intellectually but who is filled with the desire to devote his life to some branch of medicine, be it clinical medicine, pathology, hygiene, bacteriology, physiology or pharmacology, my advice always is, 'Study chemistry for at least three years. Try with all your power to master enough of this great science to start you in your career.' Why not make this attempt at a time of life when one still takes kindly to a rigid discipline such as this science exacts? To this preparation must be added the special medical training of another four or more years. A long road to travel? But I find that many young men have entered upon it with great enthusiasm."

Abel goes on to explain that he does not mean to recommend an extended course in mere sterile cramming. Under the influence of teachers who are themselves investigators and seekers for new truths, these ambitious young men are to be led to see the relation of what they learn to living questions, and are themselves to make occasional attempts at the solution of problems.

As illustrating the vast and virgin field awaiting the biologist with the chemist's training, Abel cites the many problems of the chemical properties and molecular structure (unknown except in the sole case of epinephrin) of the mysterious correlating substances stored and formed in the endocrine organs, and of numerous constituents of the circulating blood. The tremendous practical importance of decisive chemical advances in this field can be faintly adumbrated by recalling the vital consequences of one or two other chemicobiologic discoveries. The discovery of glycogen in the liver by Claude Bernard has illuminated the whole subject of carbohydrate metabolism, and has furnished the starting point for numberless researches which have been most fruitful in knowledge of such diseases as diabetes mellitus. Mieschèr's discovery of protamin nucleate in the spermatozoan heads of the Rhine salmon, and Kossel's discoveries in the field of nucleinic acids have entirely transformed our theories of the origin of uric acid in gout and of the purins in general.

Although he emphasizes our ignorance of the chemical properties and structure of the specific products of the endocrine organs and of numerous constituents of the blood, Abel does not mean to imply that we lack important chemical facts with regard to these tissues. We possess, on the contrary, a vast array of such facts; but knowledge fails us when it comes to their relation to each other and to an underlying cause. Abel admits that these problems are many-sided, and that important and fundamental discoveries, especially in the field of morphology, have been made

and will continue to be made independently of the science of chemistry. But to solve the complex problems involved in the flux and flow of life processes within plants and animals, such instruments as the microscope, the kymograph, the scalpel, are not enough; "the investigator must associate himself with those who have labored in fields where *molecules and atoms, rather than multicellular tissues or even unicellular organisms, are the units of study.*"

Yet even the solution of such important practical problems as these is not, in Abel's belief, the most important service that such training can render to the world. In striking and significant words he goes on:

"*Greater even than the greatest discovery is it to keep open the way to future discoveries.* This can only be done when the investigator freely dares, moved as by an inner propulsion, to attack problems not because they give promise of immediate value to the human race, but because they make an irresistible appeal by reason of an inner beauty. Some of the greatest investigators indeed have been fascinated by problems of immediate utility as well as by those that deal with abstract conceptions only. Helmholtz invented the ophthalmoscope and thus made modern ophthalmology possible, and at the same time did work of the highest order in theoretical physics and wrote on the nature of the mathematical axioms and the principles of psychology. Lord Kelvin took out patents on great improvements in the compass and on oversea telegraphy, and also made contributions to our knowledge of the ultimate constitution of the atom and the properties of the ether. From this point of view the investigator is a man whose inner life is *free* in the best sense of the word. In short, *there should be in research work a cultural character, an artistic quality, elements that give to painting, music and poetry their high place in the life of man.*"

Medicolegal

Surgeon Not Liable for Sponges Being Left in Patient

(Cassingham et al. vs. Berry (Okla.), 150 Pac. R. 139)

The Supreme Court of Oklahoma affirms a judgment in favor of the defendant, and denies a rehearing in this action against a surgeon for alleged negligently leaving gauze sponges in the body of the plaintiffs' mother, on whom he had operated for the removal of the ovaries, which alleged negligence, it was charged, resulted in her death. The court says that the defendant answered, among other things, that he had the assistance of two other physicians and a trained nurse, who was not employed by him, but was employed by the husband of the patient, or some one acting in his behalf; that the operation was a difficult one; that it was necessary that he should keep his mind concentrated on the surgical part thereof; that he repeatedly admonished the nurse to keep accurate count of the sponges inserted into the cavity; that that was her duty, and that he impressed on her the importance of seeing that they were all removed; that, after the operation, and before the cavity was closed, he asked her if she had counted the sponges, and if all had been taken out, and she assured him that she had counted them and that they had all been taken out. The jury was instructed that the defendant was not at any time required to exercise the highest degree of care or diligence in the performance of the operation, but the law imposed on him the duty to use reasonable care, and that, although the jury might believe from the evidence that the defendant in the performance of the operation left the sponges in the abdominal cavity of Mrs. Cassingham, and that her death was the natural, proximate result thereof, still, if the jury believed from the evidence that the defendant in the performance of the operation exercised ordinary care in keeping track of the sponges and seeing to it that they were all removed before the incision was closed, the verdict must be for the defendant. And in determining what was ordinary care in this instance, the jury must take into consideration the necessity for prompt and efficient action on the part of the defendant in stopping the hemorrhage referred to in the testimony and doing the other things necessary in the performance of the operation, the difficulty of the operation, and all other facts and circumstances in connection therewith as disclosed by the evidence. The plantiffs claimed that this instruction was erroneous in assuming and inferring as a matter of fact that the defendant could leave the sponges in the abdominal cavity in the exercise of ordinary care; that common sense dictated that leaving the sponges in the abdominal cavity was absolutely and totally inconsistent with the exercise of ordinary care. But the doctrine advanced, in this position of the plaintiffs, was too exacting for human affairs. It was equivalent to saying that, if ordinary care had been used, no mistake could have occurred. It assumed that the exercise of ordinary care would have rendered a human being infallible. It is a matter of common knowledge, based on everyday experience, that even in the exercise of the utmost care, all men do make mistakes. And it was not error, under the pleadings and evidence in this case, for the court to instruct the jury that, though they believed the defendant left the sponges in the body of the patient, and her death was the natural and proximate result thereof, yet if they also believed from the evidence that the defendant, in performing this operation, exercised ordinary care in keeping track of the sponges, and seeing to it that they were all removed before the incision was closed, he could not be held liable for negligence. The basis and gist of this action was not the result of the operation, but negligence in the performance of it. If there was no negligence in the performance of the operation, then there was no cause of action, and could be no recovery; if there was negligence in the performance of the operation, then a recovery could be had. Whether or not the defendant exercised that degree of care in performing the operation which the law imposed on him was the paramount question, and the test of the rights of the parties.

Another Court Holds Charitable Hospitals Liable for Negligence

(Tucker vs. Mobile Infirmary Association (Ala.), 68 So. R. 4)

The Supreme Court of Alabama reverses a judgment rendered for the defendant on the pleadings in this action for damages alleged to have been sustained by the plaintiff by being scalded with boiling water both internally and externally as a result of the negligence of one of the nurses employed by the defendant in the care of the plaintiff, and while she was engaged in the duties of said employment. The defense was, in effect, that, having exercised due care in the selection and retention of the nurse, the defendant was exempt from all liability to the plaintiff, because of the fact that it was an institution organized, not for profit, but for charitable purposes. The question presented is one of much interest, the court says, and a subject on which much appears to have been written in recent years. But the question, being an open one in Alabama, left the court free to act without any constraint of the rule of *stare decisis* or standing by decided cases, and in accordance with what it deems the law. It must be conceded at the outset that the great weight of authority in this country, certainly from a numerical standpoint, lies with the defendant, or is in favor of exemption to an institution engaged in charitable work from liability for the torts or wrongful acts of its servants or agents. Still there is some contrariety of opinion as to the principles on which this result is rested, and varied reasons are given, not at all consistent one with the other. Indeed, the different views are so divergent and so inconsistent that in the mind of this court the weight of authority has lost its force, and this court is rather impressed by a reading of the decisions that the courts holding to the majority view have been rather straining at legal principles in order to reach what they seem to think a desirable and just result. With the result the court cannot feel concerned. It is not for this court to creat exemptions or declare immunity from liability in a case of this character as shown by this record,

and, if considered to be so violently opposed to the public good, it is a matter that may be addressed to the legislative department. The court passes the question as to liability for injury to one who in fact accepts charity in an institution of this character as it had not that case before it, as the complaint alleged that the plaintiff agreed to pay a reasonable compensation; that is, such sum as was reasonable to be paid for the services rendered. There can be no valid reason why such a patient, dealing as she does at arm's length with the hospital, should not stand in as favorable position as the stranger, and yet many of the cases grant relief to the latter and deny it to the former. It is a principle of law, as well as morals, that men must be just before they are generous.

Society Proceedings

COMING MEETINGS

American Academy of Ophth. and Oto-Laryn., Chicago, Oct. 5-7.
Amer. Assn. of Obstetricians and Gynecologists, Pittsburgh, Sept. 14-16.
American Association of Railway Surgeons, Chicago, Oct. 13-15.
American Electro-Therapeutic Association, Atlantic City, Sept. 14-16.
American Public Health Association, Rochester, N. Y., Sept. 7-10.
American Roentgen Ray Society, Atlantic City, Sept. 22-25.
Association of Military Surgeons of the U. S., Washington, Sept. 13-15.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Indiana State Medical Association, Indianapolis, Sept. 23-24.
Kentucky State Medical Association, Louisville, Sept. 21-23.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
Missouri Valley Medical Society, Des Moines, Sept. 23-24.
New Mexico Medical Society, E. Las Vegas, Sept. 6-8.
Oregon State Medical Association, Portland, Sept. 9-10.
Pennsylvania State Medical Society, Philadelphia, Sept. 20-23.
Utah State Medical Association, Salt Lake City, Sept. 28-29.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

August, XXXVI, No. 8, pp. 375-424

1 Rugged Physiologic Treatment of Neurotic. G. M. Parker, New York.
2 Evidence of Immunity in Tuberculosis. Development of Phthisis. First Infection; Second Infection. A. H. Garvin, Ray Brook.
3 Some Remote Effects of Bad Feeding. F. Van der Bogert, Schenectady.

American Journal of Medical Sciences, Philadelphia

August, CL, No. 2, pp. 157-312

4 *Raynaud's Syndrome: Raynaud's Disease. O. T. Osborne, New Haven, Conn.
5 *Case of Family Periodic Paralysis. D. L. Edsall and J. H. Means, Boston.
6 *Rôle of Syphilis in Hypertensive Cardiovascular Disease. H. F. Stoll, Hartford, Conn.
7 Latent Syphilitic Infection of Lungs. H. R. M. Landis and P. A. Lewis, Philadelphia.
8 *Certain Physical Signs Referable to Diaphragm and Their Importance in Diagnosis. R. Dexter, Cleveland.
9 Pleurisy. G. S. Gerhard, Bryn Mawr.
10 Recurrent Pneumothorax; Report of Case. C. L. Cummer, Cleveland.
11 *Classification and Analysis of Clinical Types of Splenomegaly Accompanied by Anemia. E. B. Krumbhaar, Philadelphia.
12 Unfavorable Vaccine Results in Case of Hodgkin's Disease. R. R. Mellon, Ann Arbor, Mich.
13 Diagnosis Between Primary and Secondary Acute Cardiac Pictures. R. N. Willson, Philadelphia.
14 *Causes of Backward Displacement of Uterus. P. F. Williams, Philadelphia.
15 Certain Unclassified Fevers: Typhaceae (Typhoid Group) and Entericoid or Para-Enteric Fever. R. Stein, New York.

4. **Raynaud's Syndrome: Raynaud's Disease.**—Eleven cases are analyzed by Osborne and on a study of these he bases the following conclusions: 1. Raynaud's disease is not a distinct entity; it is a syndrome caused by the disturbance of one or more internal secreting glands. 2. There is primarily no real disease of the blood vessels, but the vasomotor control is so abnormally disturbed that most profound contraction of certain blood vessels may occur in different parts of the body, perhaps more or less coincident with abnormal dilatation of other blood vessels. If the contracted blood vessels are peripheral the parts more or less lose their function and show various trophic disturbances. 3. This blood vessel spasm may occur in the internal organs of the body as well as peripherally, though much less frequently and it is more difficult of diagnosis. 4. The syndrome is probably due to disturbances of more than one of the ductless glands of the body that have internal secretion, but there is always apparently some disturbance of the thyroid gland, perhaps a diminution of the vasodilator stuff of this gland. 5. Judiciously applied, thyroid treatment improves in the majority of cases, perhaps all, and cures in some cases. Nitroglycerin is always of temporary benefit and local heat is always of immediate benefit.

5. **Family Periodic Paralysis.**—The authors are of the opinion that this disease is one of metabolism and not of nervous origin.

6. **Syphilis in Cardiovascular Disease.**—The results of Stoll's investigation of 109 cases are summarized as follows: Syphilis is the underlying or basic factor in a much higher percentage of hypertensive cases than has hitherto been realized. Of fifty individuals studied, 90 per cent. either gave a positive Wassermann or luetin test, or were known to have syphilis, or had children with hereditary syphilis. Nineteen were from cardiovascular families. In seventeen of them either one or both tests were positive. One of the two with negative reactions is surely specific. This strongly suggests the existence of what might be termed "familial cardiovascular syphilis." It would seem that hypertensive disease is one of the most common—possibly the most frequent—of the so-called "late" manifestations of hereditary syphilis. Apoplexy and sudden cardiac death occurring in middle life are almost always due to syphilis, and it cannot be considered a negligible factor even in the aged. The remaining parent and the children of persons dying a cardiovascular-renal death in middle life should be tested for syphilis, as in a high percentage of cases they are infected. Specific treatment has given very satisfactory results in a few cases, for the most part persons whose systolic pressure was under 200. The careful administration of mercury over a period of several months has not appeared to be injurious to the kidney even when there was considerable reduction of phenolsulphonephthalein output. In a few instances the kidney function was increased several months after treatment. The luetin test, especially if activated by a week of mixed treatment, is often of more value than the most sensitive Wassermann in detecting these late manifestations of syphilitic infection.

8. **Physical Signs Referable to Diaphragm.**—It is held by Dexter that inflammation or irritation of the pleural or peritoneal surface of the diaphragm does not give rise to local symptoms. The pain resulting from such processes is referred upward along the phrenic nerves to the third or fourth cervical segments or downward along the sixth to twelfth intercostals into the lower dorsal segments. The pain is usually accompanied by tenderness and hyperesthesia or hyperalgesia of the skin. The recognition and interpretation of these signs may be of considerable importance in differential diagnosis between intrathoracic or intraperitoneal disease, in the absence of any signs in the lungs. When the part or the whole of the diaphragm is forced downward the contraction of the diaphragm exerts a more powerful inward pull along the line of its attachments. This is especially marked when the anterior portion of the diaphragm is depressed. This will result in a lessening of the outward excursion of the subcostal angle, or an actual retraction along the line of diaphragmatic attachment. Conversely, any condition which lifts the diaphragm upward

lessens the strength of the inward pull of the contracting diaphragm, with the result that the normal outward movement of the costal margins will be increased. The presence of a retraction or of an abnormal outward flaring of the subcostal angle will often be of aid in the explanation of obscure diseases of the viscera which lie immediately above or immediately below the diaphragm, especially in pericardial effusion or in subphrenic abscess.

11. **Splenomegaly Accompanied by Anemia.**—Krumbhaar states that splenectomy should be considered in all those diseases in which there is evidence of increased blood destruction, and that in early Banti's disease and hemolytic jaundice, at least, the results of splenectomy have been excellent. All such procedures, however, should be entered on most conservatively so long as so much of the physiology of the spleen remains unknown. Though its removal is known to be compatible with life, it may yet prove to have such important detoxicating relations to infection or to digestion, that splenectomy should only be practiced after most careful study and to relieve the most serious conditions.

14. **Causes of Backward Displacement of Uterus.**—In order to ascertain to what extent a history of trauma in one form or another occurs in the average case of displaced uterus Williams has examined the histories of 529 cases of this condition. A number of these cases, referred for pelvic examination as an aid in explanation of some obscure medical condition, represent accidentally discovered cases of symptomless retroposition. Childbirth at term, whether or not associated with miscarriage, explains clearly the etiology in a group of 304 cases. In a similar way a previous miscarriage or miscarriages caused the condition in a second group of thirty-three cases. The diagnosis of pregnancy or the abnormal symptoms resulting from pregnancy in a retrodisplaced uterus explains the discovery of the displacement in a group of sixteen women. There remains two groups, one of eighty-one sterile married women, and a final one of eighty-eight single women. In but few of these cases of single or sterile married women was there simple mobile retroplaced uterus. Some additional pelvic pathology, inflammatory disease of the adnexa, recent or old, and with adhesions, evidences of previous pelvic peritonitis, cystitis, appendicitis, and so on, was usually present. In thirteen cases, slightly over 2 per cent. of the whole number of cases, a history of accident or trauma was found.

Annals of Ophthalmology, St. Louis

July, XXIV, No. 3, pp. 443-610

16 Retinal Angiosclerosis and Associated Lesions. E. Jackson, Denver.
17 Strabismus. F. Valk, New York.
18 Operation for Glaucoma — Filtration Secured by Leech-Bite Incision. F. C. Todd, Minneapolis.
19 Hereditary Deficiency of Light Sense in Otherwise Healthy Eyes. Report of Case. H. M. Langdon, Philadelphia.
20 Abscess on Optic Nerve. H. S. Gradle, Chicago.
21 Significance of Transparency of Retinal Blood Column. W. L. Phillips, Buffalo.
22 Toti's Operation for Dacrocystitis; Report of Twelve Cases. V. L. Raia, Providence, R. I.
23 Face Powder Conjunctivitis. N. M. Black, Milwaukee.
24 Detachment of Retina Cured by Galvano-Puncture of Sclera, Combined with Subconjunctival Injection of Mercury Cyanid. E. L. Jones, Cumberland, Md.
25 Successful Method for Removal of Fully Dislocated (Lost) Lens, Heretofore Considered and Referred to by Authorities as "Impossible of Extraction;" Together with Five Other Cases. H. S. Paine, Glens Falls, N. Y.
26 Surgery and War. G. E. Armstrong, Montreal.
27 *Incidence of Heredity as Factor in Causation of Goiter. J. E. Summers, Omaha.

27. **Heredity in Causation of Goiter.**—Summers operated on a mother and her three daughters for goiter, and there are more members of the family who have goiter—there being, likewise, an ancestral history of goiter. In another family there was no familial history except that the father and mother had goiter; three children dying in infancy, all had goiter; another infant 8 days old, with a goiter threatening asphyxiation, was successfully operated on; the four older living children each had a goiter.

Annals of Surgery, Philadelphia

August, LXII, No. 2, pp. 129-256

28 Laparotomy in Typhoid. S. J. Mixter, Boston.
29 *Acute Appendicitis Occurring in Course of Typhoid. H. Gage, Worcester, Mass.
30 Acute Cholecystitis Complicating Typhoid. H. A. Lothrop, Boston.
31 *Pathology of Spleens Removed for Certain Abnormal Conditions of Blood. L. B. Wilson, Rochester, Minn.
32 *Clinical Notes on Splenectomy. H. Z. Giffin, Rochester, Minn.
33 *Surgical Considerations of Splenectomy. W. J. Mayo, Rochester, Minn.
34 Cavernous Angioma of Spleen; Report of Case. C. N. Dowd, New York.
35 Abscess of Spleen; Report of Case. A. W. Elting, Albany, N. Y.
36 Papillomas of Gallbladder. C. H. Mayo, Rochester, Minn.
37 Report of Cases of Gallstone Disease Operated on During Year 1914. J. B. Deaver, Philadelphia.
38 *Fistulous Communication Between Stomach and Colon, Following Gastro-Enterostomy. C. A. Hamann, Cleveland.
39 Paget's Disease of Nipple and Allied Conditions; Report of Cases. J. H. Jopson and J. Speese, Philadelphia.
40 *Excision of Tongue. A. P. C. Ashhurst, Philadelphia.
41 *Conservative Operations in Cysts of Breast. F. E. Bunts, Cleveland.
42 *Amputation of Breast by Transverse Incision. F. T. Stewart, Philadelphia.
43 Non-Calculous Obstruction of Upper Ureter. C. H. Peck, New York.

29. **Appendicitis in Typhoid.**—An instance of an acute gangrenous appendicitis, occurring at the beginning of a convalescence from an attack of typhoid, is reported by Gage. He believes that its presence in the exudate and in the walls of the appendix would seem to indicate that the bacillus of typhoid was taking at least an active part in the process, confirmed by the presence of a typical typhoid ulcer. Twice within eight days the leukocyte count had been 7,000 and 8,000, and within a few hours after the onset of the pain it rose to 14,000, and then to 15,000, and, in eight hours, to 18,000.

31. **Pathology of Spleens Removed.**—The average age of fifteen patients with a blood picture of splenic anemia at the time of operation was 36 years. The average duration of symptoms was thirty-two months. The average weight of the spleen was 1,130 grams. Histologically, the most constant features were the marked reduction of the pulp and lymphoid tissue with the great increase of reticulum and the almost constant presence of amyloid degeneration and arteriosclerosis. The average age of seven patients with pernicious anemia was 44 years at the time of operation. The average duration of symptoms was twenty-seven months. The average weight of the spleens removed was 463 grams. Cytologically the increase was mostly in the lymphoid tissue, though in one case there was a well-marked fibrosis, this spleen weighing almost twice the average weight of the glands in the series. The almost entire absence of pigment in these relatively early stage cases is again in contradiction to the usually accepted statement that in cases of pernicious anemia the spleen is pigmented. Five cases of hemolytic anemia, syphilis and hemolytic jaundice resembled pathologically the cases of splenic anemia. Four cases of secondary infection, lymphosarcoma, acute febrile nonseptic splenomegaly, and splenomegaly with eosinophilia had little pathologic relationship to either splenic anemia or pernicious anemia. The one lymphosarcoma case was typical lymphoma whose malignancy was shown clinically. The other three cases give the general picture of intense acute or subacute infection, causing hypertrophy and hyperplasia of all the parenchymal elements of the spleen without material increase in the reticulum.

32. **Splenectomy.**—The series of 58 cases reported by Giffin includes 27 of splenic anemia, 3 of the Gaucher type of splenic anemia, 7 of pernicious anemia, 2 of hemolytic jaundice, 5 of secondary infectious or septic splenomegaly, 2 of an unclassified type of hemolytic anemia with marked splenomegaly, 2 of syphilis, 3 of sarcoma or lymphoma, 2 wandering spleens and 1 each of myelocytic leukemia, cirrhosis of the liver and tuberculosis of the spleen. In addition, it includes one case of acute febrile nonseptic splenomegaly which is analogous in its clinical course to Egyptian splenomegaly, and one case in which splenome-

galy was associated with an extremely high eosinophilic count. Splenic anemia is, in the Mayo's experience, most favorable for surgical treatment. The operative risk is relatively low and the prospect for a return to normal health excellent. Three of the seven patients with pernicious anemia have shown temporary improvement up to nine months after splenectomy. Removal of the spleen in nongummatous splenomegaly associated with syphilis has been attended with excellent results in two instances.

33. **Surgical Considerations of Splenectomy.**—In fourteen of Mayo's patients edema of the lower extremities was marked. Seventeen had ascites with coincident myocardial and renal changes, seven were jaundiced, and five were suffering from high temperature at the time of the operation. There were many combinations of these conditions, all in connection with high grades of anemia, yet there were but five deaths in the hospital from all causes, in the fifty-eight cases operated on. As shown by the postmortem, two of the five deaths were from preventable causes (hemorrhage and sepsis).

38. **Stomach-Colon Fistula.**—The main facts in connection with Hamann's case were as follows: Posterior gastro-enterostomy, for duodenal ulcer, followed in five months by partial resection of the stomach and duodenum, necessitated by recurring hemorrhage; a period of good health for two and one-half years; then, after a severe strain, another hemorrhage, which was followed by a period of several months of ill-health, characterized by loss of weight and strength, diarrhea, and by eructations from the stomach which had a fecal odor. At a third operation at which there was found a gastrocolic fistula, separation of stomach, jejunum and colon from one another was done, with closure of the openings in stomach and jejunum, resection of part of transverse colon and the making of a new (anterior) gastro-enterostomy. Recovery resulted with restoration to health.

40. **Excision of Tongue.**—The slight modification of Crespi and Bastianelli's operation, to which Ashhurst calls attention, was worked out on the cadaver. The operation includes removal of the upper cervical and submaxillary lymphatics on the side affected, and of the tongue, at the same sitting. Thus it is designed for cases in which the disease is undoubtedly still in the operable stage. The technic of the operation is described in detail and well illustrated.

41. **Operations in Cysts of Breast.**—Among a series of 648 operations on the breast for every kind of disease, done by Bunts, Crile and Lower, there were sixty-eight cases of cysts of the breast, nearly 10 per cent. These sixty-eight represent all types of breast cysts without further classification. Many of them occurred among ward charity patients difficult or impossible to trace, so that they succeeded in getting but fifty-five replies to letters sent both to patients and attending physicians, and yet the significant fact was, that in not one of the fifty-five replies was there the history of subsequent development of cancer. In five cases amputation of both breasts was performed and in fifteen, amputation of one breast, leaving only forty-eight in which only a partial amputation or excision simply of the cyst was performed. In thirteen of the amputations, the pathologic diagnosis of cystadenoma was reported, in three multiple cysts, and in three simple cysts, without any further explanation, and in one cystic papilloma. The same diagnoses were made in many of the cases in which only partial amputation or resection of the cysts was performed, so that there does not appear on the face of the records any special reason for the complete removal as contrasted with the partial removal.

42. **Amputation of Breast.**—The operation described by Stewart embodies the principles laid down by Halstead, with the following: The axilla is attacked first, in order to determine the extent of the lymphatic involvement and the feasibility of radical treatment; in order to secure, once for all, at their origin, the blood vessels supplying the breast, thus minimizing hemorrhage, economizing time, and preventing shock; in order to suppress lymphatic drainage as early as possible and prevent neoplastic dissemination; and in order to leave the breast as a warm covering for the thorax until the final stage of the operation. The incision permits free exposure, including the subscapular space, which is sometimes neglected; does not run on to the arm or through the axilla, in which situations a contracting scar may interfere with the functions of the arm or press on the blood vessels and the nerves; and with extensive undermining, can almost always be closed. An incision, skirting the upper margin of the breast, is made from a point on the edge of the sternum farthest from the growth and on a level with the nipple to a point on the same level at the posterior axillary fold. The ends of this incision are joined by a cut which skirts the inferior margin of the breast. When primary closure cannot be obtained the raw surface is covered with pedunculated flaps from the abdomen and back.

Archives of Pediatrics, New York

July, XXXII, No. 7, pp. 481-560

44 *Transmission of Tuberculosis in Childhood. W. H. Park, New York.
45 Care of Tuberculous Child. I. O. Woodruff, New York.
46 *Immunization Against Measles. C. Herrman, New York.
47 Permanganate Test for Spinal Fluid. Case of Tuberculous Meningitis in Which All Other Tests Were Negative. E. Lackner and A. Levinson, Chicago.
48 *Case of Erysipelas Treated with Whole Blood From Convalescent Patient. A. D. Kaiser, Rochester, N. Y.
49 Wassermann Test in Congenital Syphilis. J. A. Roddy, Philadelphia.
50 Case of Infectious Purpura. P. S. Potter, Syracuse, N. Y.

44. **Transmission of Tuberculosis in Childhood.**—Park states that it is fairly certain that when tubercle bacilli contained in milk are actually heated to 140 F. and held at that temperature for twenty minutes, they are destroyed. If any escape, they are too few to infect animals. Butter is known to contain tubercle bacilli when made from milk containing the same. In different samples of butter the bacilli remain for varying lengths of time. In one case they have been detected for as long as five months, but usually die out within a few weeks. The evidence that butter actually transmits tuberculosis is less direct than in the case of milk. This is partly because the bacilli are less in number and partly because the butter is not usually taken at the age when tuberculosis of the bovine type is most apt to be transmitted. Whether meat from tuberculous animals has ever transmitted tuberculosis to human beings, Park believes, is a question of some doubt. When the meat is thoroughly cooked, all tubercle bacilli are certainly killed. When the meat is rare some may escape. As a matter of fact, the muscle of meat seldom contains appreciable numbers of bacilli. Although recent investigations have definitely proved that bovine bacilli infect infants and to some extent older children, yet the evidence is equally clear that the majority of infections come from one human being to another. While bovine infection is most prevalent in early childhood, the human infection increases in amount up to 15 years of age. As in the case of many other diseases, infants, as a rule, possess a considerable insusceptibility to tuberculosis.

In the case of infants and young children, the greatest danger lies in being attended by a tuberculous mother or nurse. The infant or child may receive tubercle bacilli from the hands, the lips or other portions of the person of the nurse and swallow them and so cause an infection of the tissues of the throat and intestines. The neighboring glands become enlarged and the processes in the small infant remain local or become generalized. In other cases, the fine spray from sneezing, coughing or loud speaking of the tuberculous attendant is inhaled by the infant. Some of these bacilli are caught on the nasal or pharyngeal mucous membrane and later swallowed. Others pass through the larynx and enter the bronchi and cause direct infection of the lung tissues. Tubercle bacilli, when the infected attendants are not careful, may be carried in the air on account of the breaking up of dried sputum carelessly expectorated or freed from handkerchiefs. The avoidance of this direct human contamination can probably only be thoroughly maintained by the

entire removal of the infant or child from contact with tuberculous persons. In some investigations carried out by Park and his associates they found, to a striking degree, that the children of tuberculous parents were more infected with clinical tuberculosis than those living in families in which no tuberculosis existed. In regions in which tuberculosis is abundant, a large percentage of infants and young children become infected. It is also true that in localities in which tuberculosis does not exist, adults as well as children become directly infected.

46. **Immunization Against Measles.**—Infants under 5 months who have been in intimate contact with a case of measles and have not been infected, frequently do not contract the disease when exposed later. Four such cases have come under Herrman's observation. He once had under observation a family whose history is most instructive in this connection. There are seven children, aged 14, 12, 10, 8, 6¼, 4½ years, and the youngest 10 months. The oldest child had measles eleven and three-quarters years ago; the second child was 3½ months old at the time and did not contract the disease. The third and the fourth child had measles six years ago; the second, though exposed, did not contract it; neither did the fifth child, who was then 3 months of age. The sixth child had measles two years ago, and again the second and fifth child were not infected. The seventh and youngest child was recently observed in an attack of measles, and again the second and fifth child remained free. Having convinced himself from a very large number of personal observations that infants under 5 months of age were relatively immune, Herrman obtained the consent of the mother to inoculate her infant, then 4 months old, explaining that the object was to render it immune against measles in the same way that vaccination protected against smallpox. The child was carefully observed and at no time did it present any evidence of injury.

Herrman proceeded to immunize others and in no case was any unfavorable symptom noted. The material for inoculation was obtained from otherwise healthy children, taken twenty-four hours before the measles eruption appeared. For obvious reasons the mucus from the nose was taken. This was collected on small swabs of cotton and kept in glass vials. A moist chamber was improvised by placing a moistened piece of blotting paper at the bottom. Only perfectly healthy infants under 5 months were inoculated; they were first tested with the cutaneous tuberculin test, but when it was found that in ten consecutive cases there was a negative reaction the test was deemed unnecessary. The inoculations were made by applying the swab gently to the nasal mucous membrane. Up to the present time forty infants have been inoculated at the following ages: one at 2½ months; four at 3 months; three at 3½ months; six at 4 months; fifteen at 4½ months, and eleven at 5 months. The inoculations were made by preference between the fourth and fifth months because as the immunity was not absolute at that time it seemed more likely that the organism would react with the formation of antibodies. The majority of the infants showed no distinct reaction; fifteen had a slight rise in temperature, from 100 to 101, varying in its appearance in different cases from the eighth to the fourteenth day. In a few instances a small number of spots were noted on the face or body varying in the time and number of their appearance from the fourteenth to the eighteenth day; but these were so few and indistinct that they would ordinarily have escaped detection. Of the forty infants inoculated, four over 1 year of age have since come in intimate contact with cases of measles and have not contracted the disease. In addition, having satisfied himself that those who were inoculated were really immune, 2 of the 40 infants were reinoculated at the age of 21 and 23 months respectively. In both the results were negative.

48. **Erysipelas Treated with Whole Blood.**—The well-known remedies for this infection were tried by Kaiser in this case but were unsuccessful. Whole blood taken from a patient who must of necessity have had protective bodies against the streptococcus, was used with apparently good success. Kaiser urges that in severe cases in which the outcome looks dubious this method be used if a suitable donor can be obtained.

Boston Medical and Surgical Journal

August 19, CLXXIII, No. 8, pp. 263-300

51 Tuberculosis Problem in New Hampshire. R. B. Kerr, Concord N. H.
52 Practical Treatment of Inebriety in State Institution. I. H. Neff, Norfolk.
53 Electromotor Bone Outfit and Technic of Its Usage. F. H. Albee, New York.
54 Management of Breast Feeding; Case Reports. C. K. Johnson, Burlington, Vt.
55 Presence of B. Dysenteriae, B. Proteus Vulgaris, Bact. Welchii, and Morgan's Bacillus No. 1, in Stools of Cases of Infectious Diarrhea. C. Ten Broeck and F. G. Norbury, Boston.
56 *Invasion of Bodies of Infants by B. Dysenteriae. C. Ten Broeck, Boston.

56. **Invasion of Bodies of Infants by B. Dysenteriae.**—*B. dysenteriae* of the mannit fermenting group has been demonstrated by Ten Broeck in the circulating blood of an infant suffering from infectious diarrhea. Eleven blood cultures made from patients in other cases of diarrhea and cultures made from the organs of fourteen patients were all negative for dysentery bacilli, and the one positive finding is probably an accidental invasion rather than a usual feature of the disease.

Colorado Medicine, Denver

August, VII, No. 8, pp. 213-246

57 Roentgen Ray Diagnosis of Pathologic Lesions of Intestinal Tract, Which Produce Symptoms That Simulate Organic Disease of Stomach. S. B. Childs, Denver.
58 Diseases of Female Urinary Tract Produced by Diseases of Genital Tract. A. C. Stokes, Omaha.
59 *Use of Amniotic Membraue in Prevention of Peritoneal Adhesions. C. B. Lyman, Denver.
60 Emergency Surgery, with Special Reference to Treatment of Compound Fractures. B. O. Adams, Pueblo.
61 Cyclopiegia and Skiascopy in Refraction. C. A. Ringle, Greeley.

59. **Amniotic Membrane in Prevention of Peritoneal Adhesions.**—Lyman has operated in twenty-one cases in which the membrane was employed. Most of these cases were those in which adhesions had developed after abdominal operations and in which the symptoms were very distressing. In all of the twenty cases symptoms have been completely relieved which had been in existence prior to operation. Clinically the results have been perfect in all cases. In no case has there been a return of the symptoms. Several of the patients had been operated on before for the same purpose and other methods used were failures.

Florida Medical Association Journal, Jacksonville

August, II, No. 2, pp. 33-64

62 Local Anesthesia in Infant and Aged. H. B. Cole, Mobile, Ala.
63 Unpublished Circumcision Operation. J. H. Pierpont, Pensacola.
64 Eclampsia and Its Treatment. F. J. Waas, Jacksonville.
65 Uterus Duplex; Report of Case. J. S. McEwan, Orlando.

Journal-Lancet, Minneapolis

August 1, XXXV, No. 15, pp. 399-428

66 Some Practical Considerations in Diagnosis of Abdominal Conditions. D. L. Rundlett, Sioux Falls, S. D.
67 Morphin Habit and Its Treatment. A. J. Paulson, Flaxton, N. D.
68 Few Facts Relating to Minnesota State Board of Health. H. M. Bracken, St. Paul.
69 Practical Value of Autogenous Vaccine Therapy; Report of Cases. C. H. Pierce, Wadena.

Journal of Outdoor Life, New York

August, XII, No. 8, pp. 245-275

70 Optimism and Backbone in Tuberculosis. J. S. Ford, Wallingford, Conn.
71 Problems of Clinic Organization. M. Taschman, New York.
72 Advantages of Organization of Nurses' Work in Tuberculosis Clinics. E. Gregg, New York.
73 Medical Work of Tuberculosis Clinics. J. M. Class, New York.
74 Allied Social Activities of Chelsea Tuberculosis Clinic of New York City Department of Health. H. M. Biggs, New York.
75 Standards of Medical Care and Treatment in Local Tuberculosis Hospitals. O. K. Eichel, New York.

Lancet-Clinic, Cincinnati

August 7, CXIV, No. 6, pp. 113-140

76 Aids to Diagnosis of Abdominal Disease. W. M. Harsha, Chicago.
77 Some Phases in Gallbladder Surgery. M. A. Tate, Cincinnati.
78 Relation of Mouth Infection to Systemic Disease. M. H. Fischer, Cincinnati.

August 14, No. 7, pp. 141-160

79 Hypernephroma of Kidney; Report of Case and Exhibition of Specimen. O. H. Kelsall, Louisville, Ky.
80 Report on Use of Ethylhydrocupreine Hydrochloride (Optochin) in Four Cases of Gonorrhea in Male Urethra. H. A. Brown, Cincinnati.
81 Organization of Medical Department. H. W. Cook, Minneapolis.
82 Intestinal Stasis. Bacterial Activity in Alimentary Tract. N. Mutch, London.

Medical Record, New York

August 21, LXXXVIII, No. 8, pp. 299-340

83 Clearing House for Mental Defectives. M. G. Schlapp, New York.
84 Individualism or Institutionalism. C. N. B. Camac, New York.
85 Medical and Sociological Problems of Department Stores and Their Relation to Tuberculosis. M. H. Kahn, New York.
86 *Case of Combined Extracranial Paralysis of Cerebral Nerves. J. C. Beck and G. B. Hassin, Chicago.
87 Study of Occurrence of Diphtheria Bacilli in Normal Throats. R. A. Kelly, Philadelphia.
88 Etiology of Pellagra. D. Meredith, Wichita Falls, Texas.
89 Frequently Unrecognized Symptom-Complex. W. H. Best, Brooklyn.
90 Trichocephalus Dispar Infection; Report of Case. R. R. Mellon, Ann Arbor, Mich.
91 Breaking Glass Tubes Containing Suture Material. E. H. Pool, New York.

86. **Combined Extracranial Paralysis of Cerebral Nerves.**—The prominent symptoms in this case, that of a young woman aged 18 were: 1. Pain in the neck, occiput and forehead. 2. Marked hemiatrophy of the tongue. 3. A combination of the tongue atrophy with paralysis of the ninth, tenth and eleventh cerebral nerves. 4. Nystagmus. The patient suffered from tuberculosis of the cervical glands with secondary involvement of the ninth, tenth, eleventh and twelfth nerves in their extracranial course. Such a diagnosis was not only verified by the Roentgen-ray examination, a successful operation, but also by the subsequent progressive improvement. An incision was made from the mastoid tip to the level of the cricoid cartilage along the sternocleidomastoid. The hypoglossal vagus, spinal accessory and superficial cervical nerves were dissected, particularly upward to the base of the skull, with exposure of large vessels. A calcareous gland with a number of smaller infiltrated glands were dissected from the nerves and jugular vein, each nerve being surrounded with cargile membrane, and the wound, closing by primary intention. The patient showed marked and progressive improvement. Sixteen months after the operation the general and local symptoms were found to be considerably better than before the operation and the improvement of so long a duration must be attributed to the release of the ninth, tenth, eleventh and twelfth nerves from pressure in the vicinity of the left jugular foramen by enlarged and infiltrated cervical glands.

Military Surgeon, Chicago

August, XXXVII, No. 2, pp. 107-206

92 Sparta Encampment. S. C. Stanton, Chicago.
93 Tobyhanna Camp. J. C. Bloodgood, U. S. Army.
94 German Sanitary Organization. G. M. Blech, Ill. N. G.
95 Banquet of New York State Division of Medical Reserve Corps Held in Honor of General Gorgas, February 6th. G. H. Fox, U. S. Army.

New York Medical Journal

August 21, CII, No. 8, pp. 381-432

96 Adolescent Insanity and National Health. C. W. Burr, Philadelphia.
97 Protein Absorption as Factor in Causation of Cancer. J. W. Beveridge, New York.
98 Some Implications of Psychanalysis. M. K. Isham, New York.
99 *Sodium Bicarbonate in Hay Fever. K. E. Kellogg, New Britain, Conn.
100 Health Program for New York City. H. Emerson, New York.
101 Use of Alkalies and Salts in Certain Clinical Conditions of Apparently Obscure Origin. A. D. Dunn, Omaha.
102 Appendicular Liver. R. N. Duffy, New Bern, N. C.
103 Short Cuts in Medicine. M. Schulman, New York.
104 Medical Education and Municipal Hospitals. A. Schachner, Louisville, Ky.
105 Acute Infectious Inflammations of Throat. I. M. Heller, New York.
106 Recumbent Position in Scoliosis. M. Strunsky, New York.
107 Acute Intestinal Obstruction Complicating Uterine Fibromyomata. J. L. Amster, New York.

99. **Sodium Bicarbonate in Hay Fever.**—Kellogg's case records show a series of fifty cases of hay fever, covering a period of three years. The first patient presented a general acidosis with a mild and transient glycosuria; the second high specific gravity of urine with a marked acidity. Acting on the theory that the general condition served as a primary cause by reason of certain irritating qualities of the blood, making the mucous membranes hypersensitive, Kellogg gave both patients sodium bicarbonate in dram doses three times a day. Such a marked relief from the rhinitis symptoms followed that he felt justified in administering the same treatment to the remaining forty-eight. Ninety per cent. of the patients enjoyed a marked amelioration of symptoms, and 70 per cent. complete relief after a few days' treatment; the remaining 10 per cent. were not as markedly benefited, although they all seemed to show some improvement. In three cases it was found necessary to supplement the treatment by the administration of a nasal spray of sodium bicarbonate solution.

Northwest Medicine, Seattle

August, VII, No. 8, pp. 259-272

108 Disturbances of Cecum and Appendix. C. S. Leede, Seattle.
109 Case of Gallstone Ileus. E. O. Jones, Seattle.
110 *Syphilitic Origin of Various Gastro-Intestinal Affections. A. P. Lensman, Seattle.
111 Epigastric Hernia; Report of Case. J. Besson, Portland, Ore.
112 Hernise of Abdominal Wall in Fat Women; Report of Cases. W. B. Palamountain, Colfax.
113 Nitrous Oxid and Oxygen, Anesthetic of Choice in Obstetrics; Report of Case. L. H. Maxson, Seattle.

110. **Gastro-Intestinal Affections.**—In the etiology of gastric ulcer, tumor, stenosis of pylorus or ulceration and obstruction of intestines (large or small), Lensman says, syphilis must be borne in mind. Like specific disease elsewhere, the tendency is to ulceration, adhesions, scars, deformity of organs. In every single important symptom in gastro-intestinal pathology (hematemesis, gastralgia, achylia, hyperacidity, constipation, enteralgia, vomiting, fever, etc.), a specific taint should be searched for. In certain cases nearly all the technic of the newer finds, if accessible, should be used. The Wassermann and Noguchi reactions, the luetin test, a provocative salvarsan test, all these are valuable when accessible. In certain cases, in which all tests fail and there is still some reason to believe that syphilis is the cause (indefinite history, some patent medicine taken which masks the true state of affairs), Lensman does not hesitate to give antisyphilitic remedies as a therapeutic test. The Wassermann and other reactions, when positive, signify that the individual is syphilitic and not necessarily the particular organ which gives the chief symptoms. If the specifics fail in their effect, the patient may need more than one kind of treatment to secure relief or cure.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

July, XXI, No. 1, pp. 1-51

114 What Every Physician Should Preach About Cancer. H. A. Royster, Raleigh, N. C.
115 Hypernephroma. J. G. Rennie, Petersburg.
116 Acute Appendicitis, End Results of One Hundred and Fifty Cases Operated on. G. P. LaRoque, Richmond.
117 Study of Uterine Hemorrhage T. A. Ashby, Baltimore.

Ophthalmic Record, Chicago

August, XXIV, No. 8, pp. 385-458

118 Acute Axial Optic Neuritis, as Early Symptom in Disseminated Sclerosis. E. A. Shumway, Philadelphia.
119 Shrapnel Wound of Occipital Region with Involvement of Visual Centers. C. A. Wood, Chicago.
120 Birth Injuries of Eye. C. P. Small, Chicago.

121 Cataract Incision Leaving an Undetached Conjunctival Flap with Bridge of Conjunctiva on Temporal Side. F. C. Todd, Minneapolis.
122 Annular Opacity of Lens, Following Penetrating Wound into Vitreous Chamber. T. B. Holloway, Philadelphia.
123 Case of Acute Retrobulbar Neuritis. C. Williams.
124 Spontaneous Dislocation of Sclerosed Lens into Anterior Chamber. F. Krauss, Philadelphia.
125 Operation for Direct Drainage of Lachrymal Sac into Middle Meatus from Standpoint of Ophthalmologist. A. E. Prince, Springfield.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

August, XXIII, No. 8, pp. 229-256

126 Purin Metabolism Disturbances as Related to Insomnia. C. L. Bennett, Los Angeles.
127 Orbital Tumors. J. G. Dorsey, Wichita, Kas.
128 Case of Typhoid Complicated by Abortion, Intestinal Hemorrhage and Perforation of Ileum. B. F. Smith, Hillsboro, Tex.
129 Research in Mechanical Pathology of Foot with Theoretical Suggestions of More Rational Treatment. B. Belove, Kansas City.

West Virginia Medical Journal, Wheeling

August, X, No. 2, pp. 35-72

130 Diabetes With Special Reference to Treatment. L. D. Wilson, Wheeling.
131 Consideration of Rectal and Colonic Reflexes and Neuroses. W. M. Beach, Pittsburgh.
132 Trachoma in West Virginia. H. F. Stiltner, Pineville.
133 Fallacy of State Paternalism. C. O. Henry, Fairmont.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

August 7, II, No. 2849, pp. 205-244

1 Sidelights on Practice of Medicine in Past from Early English Literature. M. Greenwood.
2 Principle of Anoci-Association Applied to Medical Practice. F. M. Rowland.
3 Treatment of Pulmonary Tuberculosis by Nitrogen Compression. G. Lucas.
4 *Pathology and Treatment of Gunshot Wounds of Small Intestine. O. Richards.
5 *"Trench Back" Treated by Sodium Salicylate Ionization. J. D. Sandes.
6 Stomoxys, Stable Fly. A. E. Shipley.

4. **Gunshot Wounds of Small Intestine.**—Simple suture of wounds of the duodenum and colon, Richards says, is both necessary and sufficient. If this is efficiently done the contents will be driven along their proper course; if it is not done, they will be continually forced either into the peritoneum or into the extraperitoneal tissue. In neither case will there be stasis. The essential thing is to close the leak—there is no danger of obstruction. In the jejunum and ileum, on the other hand, simple closure of the wound would be both unnecessary and inefficient. As regards the escape of the contents, it would merely effect, with a certain amount of shock, disturbance, and fouling of the peritoneum, what Nature had already done. As regards paralytic obstruction, it would do much to increase it. The proper course in such a case would be to resect not only the injured portion, but also as much of the bowel above it as is likely to remain out of action and constitute a functional obstruction. The amount to be removed depends first, on the number and relative position of the wounds; apart from this, it increases with delay, since the condition which makes resection necessary is one which progresses gradually and regularly upward. Richards condemns the common practice of withholding water from such patients because it causes much suffering. In case of internal hemorrhage and during transport it is probably necessary.

Once in hospital, if a man is definitely in a dying condition, Richards says, no good purpose is served by adding thirst to his sufferings, while if he has an injury which requires operation, the worst that water in reasonable quantities is likely to do is to hasten the time at which he develops symptoms and is radically dealt with. Water does not produce flatus; it probably never reaches the wounded area, and if it does it is unlikely, for reasons already given, to cause any escape of the contents. Of five patients operated on by Richards, two died outright, two recovered completely, and one recovered from the operation but died a week later from another cause. The two who recovered completely happen to be those in which the largest amounts of bowel were removed (2½ feet and 4½ feet respectively).

5. **Trench Back.**—"Trench back" is the term applied to a variety of conditions arising from injury to the back in the lumbar or sacral regions. The injury is usually caused by the impact of large and heavy masses of matter, such as a quantity of earth or sandbags. As the condition is of great importance on account of its frequency and the prolonged disability it usually entails, Sandes brings forward the following method of treatment: All cases of this condition should be examined by Roentgen rays before being treated in the manner suggested, and all cases of injury to the spine and pelvis excluded. Patients with anesthesia of the lumbar and sacral regions are unsuitable for ionization as they are very liable to be badly blistered during treatment. The majority have no spinal lesion, the symptoms being due to contusion or sprain of the muscles or fasciae alone.

It is for cases of this class that Sandes advocates ionization. It is applied as follows: A 1 per cent. solution of sodium salicylate is prepared. A large pad sufficient to stretch right across the back, and 8 or 10 inches broad, is saturated with the solution. The pad must be composed of at least six layers of lint. The patient is placed face downward on a couch, and the pad is laid over the painful area. A mail chain electrode is placed on top of the pad, and the whole firmly bound with a bandage. The mail chain electrode is connected with the negative pole of a battery or electric machine. An indifferent electrode is then placed on some other region, say the upper dorsal, moistened with sodium chlorid solution, and connected with the positive pole. The current is gradually turned on and treatment continued for about fifteen minutes. Applications are carried out twice weekly, and improvement often occurs after the first. Cure results in some cases in two or three applications.

Dublin Journal of Medical Science

August, III, No. 524, pp. 81-160

7 Antityphoid Inoculation. W. E. Hopkins.
8 *Constipation in Relation to Pseudodysentery and Continued Fever in Tropics. C. G. S. Baronsfeather.
9 Clinical Report of Rotunda Hospital, for One Year, November 1, 1913, to October 31, 1914. R. E. Tottenham and E. C. Crichton.
10 Pathologic Report of Rotunda Hospital for One Year, November 1, 1913, to October 31, 1914. R. J. Rowlette.
11 Vaccines in Treatment of Respiratory Diseases. R. J. Rowlette.

8. **Constipation in Relation to Pseudodysentery.**—In the tropics Baronsfeather has met with three conditions all due to irregularities in the intestinal tract, which, so far as his experience goes, he says, are too often wrongly treated and at times with fatal results, and yet these conditions are of everyday occurrence. 1. Continued fever, with yellow-furred tongue, offensive breath and loss of appetite; temperature 99 to 103 F. in different cases. Constipation is usually present; in such cases quinin is useless. The treatment is, in mild cases,

	gm. or c.c.	
℞ Iridin.		
Ext. euonymi, ... aa	06	gr. i
Ext. colocynth comp.	1	gr. iss
Ext. hyoscyami	03	gr. ss

M. et fac pilulas.
Sig.: One at noon and one at bedtime.

A saline mixture with oranges and mineral waters is given, together with the withdrawal of all solid food for a day or so. In more severe cases, 1 grain of calomel is given every two or three hours, with pil. coloc. et hyoscyami and an enema, if necessary, in addition to the former treatment. 2. Pseudodysentery, which occasionally may cause mucus in the stools—the foul tongue, lack of appetite, and generally healthy appearance of the patient being the grounds for the diagnosis—this being, to a certain extent, a second

stage of the continued fever, has a similar treatment. A smart purgative—calomel, 2 to 5 grains repeated, followed by a saline draught, liquid diet, partial starvation, and mineral waters, etc., with later on, if required, compound bismuth powders—easily cures. 3. Diarrhea, often green in children from 1 month upward, due to irregularities in diet, too often called dysentery, the treatment for which is: 1. Under 4 months of age—

	gm. or c.c.	
℞ Hydrarg. cum cretae	.06	gr. i
Sodii bicarb.	.13	gr. ii
Pulv. rhei. comp.	.2	gr. iii

M. et fac pulverem.
Sig.: From 3 to 6 grains, as directed.

To be given when the child is at the breast. 2. Over 4 months, half a grain of calomel, and after, if required, 1 dram of castor oil, the child to be watched for a few days. The treatment should be repeated in serious cases.

Edinburgh Medical Journal

August, XV, No. 2, pp. 81-160

12 *Treatment of Tuberculosis by Tuberculin. Denys.
13 Use of Scopolamin-Morphin in Labor. J. H. Croom.
14 Treatment of Exophthalmic Goiter, Especially in Relation to Control of Protein Metabolism. F. D. Boyd.
15 Ocular Troubles of Neurasthenia. T. A. Ross.
16 Second Report on Work of Clinical Medicine Research Laboratory, Royal Infirmary, Edinburgh. H. Rainy.
17 Maternity and Child Welfare. A. D. Fordyce.

12. **Treatment of Tuberculosis by Tuberculin.**—Out of 442 cases treated by Denys with his B. F. (*bouillon filtré*) tuberculin, 193, that is, 43 per cent., are classed as cured. Fifty-six patients, that is, 20 per cent., are classed as quasi-cured. 36 patients were greatly improved; 29 were improved. Among these 442 patients only 5 took their cure of B. F. in a sanatorium; of the others a certain number passed some time in the country; the rest continued to live in their own homes. Some gave themselves complete or comparative rest; others continued their occupations.

Indian Medical Gazette, Calcutta

July 15, L, No. 7, pp. 241-280

18 Treatment of Ankylostomiasis. C. Lane.
19 Shrapnel Wounds of Knee-Joint. C. Newton-Davis.
20 Small Outbreak of Cerebrospinal Fever. F. P. Mackie.
21 *Salvarsan in Malaria. H. Stott.
22 Report and Statistics of Cholera Epidemic in Ahmednagar District for Years 1912 and 1913. C. Maddock.
23 Useful Splint for Compound Fractures of Leg. C. A. Barber.
24 Case of Chronic Intestinal Obstruction Due to Tuberculous Cicatricial Constrictions of Jejunum. S. H. Pugh.
25 Foreign Body in Trachea. G. Pandalai.

21. **Salvarsan in Malaria.**—While Stott found that salvarsan has some undoubted specific action on the asexual forms of malarial parasites, it apparently has no influence in the prevention of the evolution of the sexual cycle, nor does it show that immediate and progressive beneficial effect in malarial disease which so often follows its administration in certain cases of syphilis. Stott is convinced that in general use salvarsan will never replace quinin, in particular use it might possibly be thought desirable to administer salvarsan in a case of persistent malaria resisting quinin by mouth and syringe. Here there is no apparent indication for the employment of salvarsan in malaria. The fact that salvarsan (an organic arsenic compound) has some definite specific influence on the asexual cycle of the malarial parasite, Stott says, might be regarded as a possible plea for the more extended prescription of oral arsenic as long employed by the savants of old, combined with quinin in the treatment of present-day acute malarial disease.

Bulletin de l'Académie de Médecine, Paris

July 20, LXXIV, No. 29, pp. 73-93

26 Vaccination Against Typhoid. (600 injections antityphoidiques.) L. Landouzy.
27 Serotherapy of Typhoid. (Traitement de la fièvre typhoide par l'homoserothérapie dans l'armée serbe.) Pétrovitch.
28 Cancer of the Liver Simulating Gallbladder Disease; Two Cases. (Le cancer du foie à type sus-vésiculaire.) A. Gouget.
29 Tetanus. (16 cas de tétanos observés à Vitré.) Castueil and O. Ferrier.
30 Treatment of Syphilis in the Active Army. (Traitement des accidents syphilitiques chez les combattants, par les cures arséno-mercurielles surintensives et brèves.) Dalimier and Débat. See Paris Letter, p. 813.

Presse Médicale, Paris

July 26, XXIII, No. 34, pp. 269-280

31 *What France Has Accomplished in the Medical Sciences in the Last Fifty Years: Internal Pathology. IV. J. Castaigne.
32 *Predetermination of Sex. (L'origine des sexes.) H. Coupin.

July 29, No. 35, pp. 281-288

33 Macroscopic and Microscopic Study of Wounds of the Nerves in War. E. Jourdan and J. A. Sicard.
34 Bridge Plaster Dressings. (L'immobilisation des fractures des membres inférieurs dans les ambulances.) Fieux and Leremboure.
35 Mosquitoes and Flies. (Notes de parasitologie pratique en campagne.) J. Legendre.

31. **Necessity for Synthesis as well as Analysis at the Bedside.**—At the conclusion of Castaigne's long review of the achievements in the medical sciences in France in the last fifty years, he expatiates on the importance of correlating the symptoms. It is not enough to collect all the clinical data in a given case, they must be classified, the important ones recognized and correlated, and to do this properly requires a broad and thorough general medical education. He insists that every patient should be examined throughout, whatever local affection may have brought him to the doctor. A good general study of the case will often clear up the diagnosis and permit effectual treatment when otherwise the specialist would have worked in vain. Castaigne extols the advantages of the French system of bedside instruction. The least among the medical students are thus given a chance to examine for themselves hundreds and hundreds of patients, which is a great help in developing good clinicians.

32. **Predetermination of Sex.**—In the course of this review of the various theories that have been presented on this subject, Coupin describes experimental research by different scientists and urges that they be continued or controlled. Among those to which particular attention is called are Robinson's injections of epinephrin in guinea-pigs, in the hope to influence the development as to sex, and in fact there were more males than females in the litters afterward. He sought to make the injection during the hypothetic interval between the spermatozoon entering the ovum and determination of the sex. Another line of research which seems promising is based on Russo's finding that, in rabbits, some ova contain a large proportion of lecithin while others have very little. On the assumption that the lecithin-rich ova produce females, he injected lecithin into female guinea-pigs. The following litters contained twenty-six males to forty females while control litters numbered thirty-six males to twenty-nine females. Still another line of research that seems promising is based on the assumption that the young ovum develops a female while, if not fecundated until late, a male results. Those who have followed Thury in research work on this assumption have had conflicting results, some positive and some negative. The old tradition that more boys than girls are born after a war seems to be substantiated, Coupin remarks in conclusion, by some recent figures from Austria. They state that among 559 children born to refugees from Galicia and Bukovina, there were 314 boys to 245 girls. He also cites a Vienna notice that since last October there have been 140 boys born to each 100 girls, but Coupin does not vouch for the accuracy of these figures.

Revue Médicale de la Suisse Romande, Geneva

July, XXXIV, No. 7, pp. 361-412

36 The Descending Branch of the Hypoglossal Nerve. E. Kummer.
37 Five Months of Military Surgery. C. Perrier.
38 *Preoperative Measures in Gynecology. O. J. Rapin.
39 *Motility Test for Typhoid Bacilli in Stools. (Nouveau procédé de recherche du bacille typhique dans les selles.) P. Gautier.

38. **Preparing a Woman for a Gynecologic Operation.**—Rapin enumerates a number of minor points for the preoperative period which may turn the scale for or against success. A complete examination may prevent some dangerous surprise later. He believes in a purge several days

before the operation, giving the bowels time to get steady again afterward. The aim should be to have them working physiologically at the time of the operation, and this cannot be depended on when the purge is given too close to the operation, as the purge entails paresis of the bowels for several days. After he has thus cleared out the intestines, he permits only food of easy digestion, not toxic, and nothing but fluids the night before the operation. To avoid the necessity for catheterization afterward, he has the women trained to urinate reclining during the days preceding the operation.

The hemoglobin percentage should always be determined, but even a very low proportion need not contraindicate the operation. He successfully removed a myomatous uterus in one case although it showed only 25 per cent. of hemoglobin, and resected a cancerous cervix in another case showing only 20 per cent. of hemoglobin. As the first patient seemed predisposed to hemorrhage, he gave as a preventive an injection of an extract of blood platelets. Under other conditions he relies merely on clamps and ligatures.

Spinal anesthesia and scopolamin-morphin he has discarded or reserves for maternity cases. Regional anesthesia from paravertebral injections can be counted on in gynecology only for operations on the vagina, perineum and abdominal wall. Inhalation anesthesia is still the preferable technic for gynecologic operations. Other requirements are one aid and one nurse; self-holding retractors, applied over gauze to prevent injury of tissues; rubber gloves for the operator, over which he draws cotton gloves to render them less slippery; painting the region with 10 per cent. iodin; and a sheet thrown over the patient, with a hole cut out over the field of operation.

39. **Rapid Bacteriologic Differentiation of Typhoid.**—Gautier has been testing the sand technic devised by Carnot and Hallé (described in THE JOURNAL, Feb. 20, 1915, p. 677). A pipet tube 33 cm. long by 5 or 6 mm. in diameter is softened in the center and the ends brought up parallel, to form a U. One of the arms is filled to a height of 10 cm. with very fine sand, (passed through a No. 40 sieve). The other arm is then filled with hot bouillon tinted with neutral red, which works up through the sand until the fluid is at the same level in each arm. The arm in which there is no sand is inoculated with a few drops of fluid with which the intestine has been rinsed out after a preliminary enema, and the tube is incubated for eighteen hours. The bacteria that are most motile will penetrate the sand and develop in this arm of the tube. Gautier's experience with the sand test in thirty cases confirms the assertions of Carnot and Hallé, but he found that, occasionally, colon bacilli were sufficiently motile to pass through the sand. Consequently it may be necessary to apply the agglutination test afterward to determine finally the presence of typhoid bacilli. He found that the sand barrier infallibly excluded all but extremely motile bacteria, and thus much facilitated and accelerated differentiation.

Berliner klinische Wochenschrift

July 26, LII, No. 30, pp. 781-804

40 *Atypical Features of Typhoid in the Active Army. (Atypische Verlaufsformen des Typhus im Felde.) C. Hirsch.
41 Bullet in Spinal Cord. (Ein typischer Steckschuss des Rückenmarks.) Cornen.
42 Walking Plaster Cast with Extension for Fractured Leg. E. Hadra.
43 Prothesis to Correct Paralysis of the Peroneus. K. Fleischhauer.
44 *Mastic Test for Pathologic Cerebrospinal Fluid. (Eine neue Reaktion zur Untersuchung des Liquor cerebrospinalis.) G. Emanuel.
45 Further Research on Fowl Leukemia. (Uebertragbare Hühnerleukose.) V. Ellermann.
46 *Tar in Treatment of Chronic Moist Eczema. Thedering.
47 Simplification of Test for Acetone. (Die Anwendbarkeit der Frommer-Engfeldt'schen Acetonprobe für klinische Zwecke.) N. O. Engfeldt.

40. **War Typhoid.**—Hirsch comments on the difference between typhoid fever under ordinary conditions and under conditions of war. The mortality is especially high among the young men in the active service while in peace this group generally escape with a mild form of the disease. The necessity for transportation tends to aggravate the disease, but the evils of this can be minimized by recognition of the disease in its incipiency, removing the patient in the morning, and giving him stimulants before the start or on the way, with special care for his suitable nourishment. At all times the heart and vasomotors must be supervised and kept in tone. Before antityphoid inoculations were enforced, the mortality was 7 per cent.; the inclusive mortality has been 6.3 per cent.

It is his experience that the number of cases of typhoid has not been materially reduced by prophylactic vaccination, but there is no doubt that it attenuates the disease, rendering it of the abortive type or like typhoid in children, but relapses are more common than usual, although they run their course as a rule without complications. When the men were vaccinated during the incubation or initial phase of typhoid, the course of the disease proved exceptionally severe. Suspects should have their temperature taken several times a day, especially after exercise, and if the temperature shows marked fluctuations, even within the so-called normal range, typhoid is rendered probable, especially when the pulse is accelerated and the man begins to lose weight. A rise in agglutinating power on repeated tests at brief intervals is also suggestive, particularly when various strains are used in the tests.

It is possible, Hirsch adds, that the mild course of typhoid in the vaccinated may leave the man susceptible to new typhoid infection. Diphtheria patients treated with antitoxin seem to be more liable to contract diphtheria again later than those who have passed through a severe unmodified diphtheria. A severe attack of typhoid, we know, renders the patient less liable to have the disease again than a walking case of typhoid.

44. **Mastic Test of Cerebrospinal Fluid.**—Emanuel explains the theoretic and chemical bases for the colloidal gold test of the cerebrospinal fluid, and proceeds to say that an emulsion of mastic answers the same purpose as the colloidal gold and gives equally reliable findings, while mastic is inexpensive and easily obtained. He dissolves 10 gm. mastic in 100 c.c. alcohol and filters; 1 c.c. of this mother solution is mixed with 9 c.c. alcohol and insufflated rapidly into 40 c.c. distilled water. The mastic is precipitated with 1.25 per cent. salt solution; 1 c.c. of this flakes out 1 c.c. of the mastic solution. Five test tubes are used for the test. In the first is placed 1.5 c.c. of the salt solution and 1 c.c. in all the others. To the first tube is now added 0.5 c.c. of the spinal fluid. After thoroughly mixing 1 c.c. is transferred to the second tube; from this 1 c.c. to the third tube, and so on. None of the spinal fluid mixture is put in the fifth tube. The row of tubes thus contain respectively 0.25 c.c., 0.125 c.c., 0.062 c.c., 0.031 c.c., and 0 c.c. of the spinal fluid. Then 1 c.c. of the mastic solution is added to each tube and the reaction at the end of twelve hours is recorded. With normal spinal fluid there is no precipitation in the first four tubes. This testifies to the presence of some protective colloid in normal spinal fluid. With spinal fluid from persons with general paralysis or other syphilitic affections of the brain, precipitation occurs promptly in all the five tubes. He lists the findings in thirty-two cases showing the constant and marked positive reaction in the fourteen cases with a history of syphilis and the constantly negative response in various forms of dementia praecox or insanity, epilepsy, neurasthenia, etc. The only exceptions were one case each of traumatic neurosis, dementia praecox and hemorrhage, in all of which there was a faintly positive reaction, but nothing to be compared with the pronounced response in progressive paralysis, etc.

46. **Tar in Chronic Weeping Eczema.**—Thedering agrees that tar is the worst of poisons for acute moist eczema, but he maintains that in nearly every case of the chronic oozing form it will transform it within twenty-four hours into the dry form. He uses, exclusively, coal tar in solution. No water or soap can be used with it, and no dressings are required. He merely paints the oozing patch with the tar solution. In three or four days a dry scab forms over the

surface and a 2 per cent. salicylic acid salve is rubbed into this, morning and evening, until the scab has softened. Then, about the seventh day, a single soap bath is given the region, using a mild soap, to wash off the scab. Further treatment can be with tar or Roentgen exposures. He has found this tar treatment useful for chronic oozing eczema in children, but the possibility of poisoning from the tar on extensive areas must be borne in mind when treating children.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 17, XLV, No. 29, pp. 897-928

48 *Appendicostomy. G. Patry.

July 24, No. 30, pp. 929-960

49 Care of the Wounded and Other Features of Winter Campaigns. (Gefechtssanitätsdienst im Winter.) G. Miescher.
50 *Albuminuria in Healthy Soldiers. M. Reber and P. Lauener.
51 Health Insurance of the Soldiers. (Die Militärversicherung.) F. Gebrig.

48. Appendicostomy.—Patry has utilized the appendix, sutured to the skin, as a means to flush out the bowels and also as a drain, and has been much impressed with the benefit therefrom. He remarks that Keetley's overenthusiasm on the subject tended to discredit it on the continent, so that the operation has not found many adherents outside of America; those interested, he adds, will find the bibliography in the *Journal de Chirurgie*, 1913, X, 273. He relieved the pain and materially improved the general condition, in a case of mercuric chlorid poisoning, by rinsing out the colon and rectum through the appendix sutured to the skin, repeating the rinsing every two hours at first. Another patient was a robust man of 60 who developed ulcerative colitis rebellious to all kinds of treatment. The large intestine was finally examined throughout for cancer at a laparotomy, but no tumor was found. The appendix and cecum were sutured to the skin and the colon and rectum were systematically rinsed out through it, the patient doing this himself, sending the salt solution through under sufficient force so that it emerged from the anus at once. The condition began to improve immediately; the man regained the 60 pounds he had lost, the ulcerations in the rectum healed, and the man has been in complete health during the fifteen months to date since the operation to close the fistula. In another case Patry sutured the ileocecal valve to the skin, Gibson's cecostomy, as the appendix had been removed long before. The fistula closed spontaneously when the catheter was no longer used, but he could not discover any advantages from this technic over simple appendicostomy.

In the cases on record of operative treatment of intestinal stasis, a series of operations have generally been necessary; five have already been done in one case he knows of and the patient is still not cured. He is convinced that a simple appendicostomy might have cured the patient at the start, and in any event, it would have done no harm. The bowel flushing through the appendix fistula acts mechanically rather than by chemical influences. He advises oil, boiled water and saline; the bowel is cleansed out, soothed and finally stimulated. The colon contracts to its natural size and physiologic conditions are gradually restored. Irrigation by way of the rectum is against the waves of peristalsis and is thus antiphysiologic. Even admitting that there may be occasional retrograde peristalsis, exaggeration of them is certainly pathologic.

He reports the case of a young woman whose serious condition from chronic constipation was only temporarily improved by partial resection of the colon and colopexy. A laparotomy showed that there were no disturbing adhesions but the transverse colon swung down into the small pelvis. The appendix was fastened to the skin and decapitated and a Nélaton catheter was introduced into the cecum. At first merely 200 gm. of oil and then saline were injected, increasing the amounts as soon as there was a daily passage. The amounts injected were then reduced and the intervals lengthened. Finally only two a week were given, but this was kept up for four months, and clinically normal conditions were restored, the patient gaining 44 pounds. The bowel functioning is still normal two years later.

With peritonitis, he has been impressed with the rapid resumption of normal bowel functioning after appendicostomy, even if nothing is done but to inject water under pressure and let it run out again. The alternation of filling and emptying the bowel seems to stimulate peristalsis.

50. Albuminuria in Healthy Soldiers.—Reber examined the urine of 528 soldiers of a battalion stationed at the boundary of Switzerland. The men were all supposedly healthy, but 10.6 per cent. had albumin in their urine. In 11.5 per cent. of 347 tested, the albuminuria occurred only after the day's labor, but in 7.9 per cent. of 177 examined, it was found in the morning after the night's rest. The erect position during drill acts on the unaccustomed to induce albuminuria. Jehle has called attention to the albuminuria of soldiers as an occupational affection, the result of their military erect attitude. The albuminuria in Reber's battalion appeared and disappeared in the men and fluctuated in amount. Even when it was quite pronounced one day, the urine might be entirely free from albumin the next day. A large proportion of cases was sometimes evident on Monday. The younger men formed the majority of those with albuminuria. Long marches did not induce the albuminuria as much as long drilling.

Deutsche medizinische Wochenschrift, Berlin

July 22, XLI, No. 30, pp. 877-904

52 *The Heart in War Typhoid. (Wirkung der Typhusinfektion auf das Herz bei unseren Feldtruppen.) Rohmer.
53 Papilloma in Fourth Ventricle with Attempted Operation and Necropsy Findings. Gierlich.
54 *Spiral Incision in Treatment of Varices. M. Krabbel.
55 Improved Tubes for Roentgen Work. (Die neuen Röntgenröhren von Lilienfeld, Coolidge and Zehnder.) M. Levy-Dorn.
56 Inhalation of Ammonium Chlorid in Catarrhal Affections. (Der Salmiator.) A. Hartmann.
57 *Attempt at Suicide with Tuberculin. T. Janssen.
58 Construction and Effect of English Bullet. Marx.
59 Para-Dichlorbenzol for Extermination of Lice. F. Curschmann.
60 Military Service and Health Insurance. (Kriegsdienst und Versicherung.) Ebermayer and O. Salomon.

52. The Heart in War Typhoid.—Rohmer has encountered 22 cases of typhoid in men whose hearts were already suffering from the stress of the campaign. In a previous series of fifteen fatal cases all but three of the men died from heart weakness, but in this later series heart stimulants were given freely, especially intravenous injections of strophanthin, and all the patients recovered except one who succumbed to intestinal hemorrhage when apparently convalescing. The heart findings are even yet not entirely normal.

54. Spiral Incision in Treatment of Varices.—Krabbel has applied the Rindfleisch spiral incision method in the treatment of extensive varices five times on four patients, and reports "surprisingly good" results. Even old rebellious leg ulcers healed completely and there has been no sign of recurrence to date. He modified the original technic by healing by primary intention, with a linear scar. He also ligates and resects the saphenous vein in the thigh before starting the spiral incision on the leg. Expelling the blood from the limb with an Esmarch band is an important aid in the operation. All the visible veins were ligated twice, the entire procedure seldom requiring more than an hour, and the healing was complete in a month and the men returned to work in from six to ten weeks after the operation. One of the patients was a man of 43 with varices for sixteen years and a leg ulcer incapacitating him for twelve of the last twenty-four months.

57. Attempted Suicide with Tuberculin.—Janssen relates that a woman with mild pulmonary tuberculosis, who had frequent periods of fever up to 38.5 C and exacerbation of symptoms temporarily incapacitating her, tried to commit suicide by injecting a fluid which had been given her for inunctions. This proved to be tuberculin and she injected 2 c.c. at the one time. She became very sick, with high fever and very rapid heart action. The foci in the lungs had not changed enough to explain this aggravation of the condition, and the attending physician was puzzled indeed until the young woman confessed the injection she had made. The heart was kept up with stimulants and the storm gradually

subsided, leaving the patient remarkably improved over her previous condition, with her earning capacity restored.

Medizinische Klinik, Berlin

July 25, XI, No. 30, pp. 823-848

61 *Operative Treatment of Abdominal Wounds in War. (Darmschüsse im Kriege.) Enderlen and Sauerbruch.
62 *Gynecologic Affections in Connection with Insanity. (Aetiologie und Therapie von Frauenkrankheiten bei Irren.) L. Fraenkel.
63 *Xanthoma. Linser.
64 *Urochromogen Reaction in Diagnosis of Typhoid. (Bedeutung der Weiss'schen Urochromogenprobe.) K. Halbey.
65 Sterilization of Clothes and Rooms with Steam from Portable Engines. (Ueber Massenentlausung und Desinfektion von Gefangenenlagern durch Lokomobilen.) Blumberg.
66 Tablets to Stimulate Secretion in the Throat. Collischonn.

61. **Operative Treatment of Abdominal Wounds.**—Enderlen and Sauerbruch are ardent advocates of prompt operative treatment whenever the gastrointestinal tract is wounded. This was the case in 211 of the 227 soldiers brought in with abdominal wounds. The intestines were found intact when the abdomen was opened in 11 cases, and in the other 5 the liver had been injured beyond repair and 3 died. Of the 211 others with the intestines wounded at one or more points, 44.4 per cent. recovered under operative treatment. The proportion of cures increased from month to month as the symptoms were recognized and the operation performed earlier. Lately the soldiers have been reaching the field hospitals in from two to four hours after receiving wounds of the abdomen. Infusion by the drop method has given better results than by other technics. Direct transfusion of blood is no longer done. While Enderlen thinks that a half sitting position aids in recovery, Sauerbruch lays his patients flat on the back, and no difference in the outcome could be detected. Heat to the abdomen proved a powerful adjuvant. One great advantage of operative treatment is that the patient can be given nourishment soon afterward. Repose is an important factor in the outcome. The great difficulty is to decide whether or not the intestines have been injured; this is the more difficult the earlier the patient is seen. The abdominal walls may be rigid and there may be eructations and vomiting, and yet only comparatively slight injury of the liver, mesentery, etc., the bowel being intact. In other cases the abdomen may be soft, there is no vomiting and the pulse is good at first, and yet the intestines may be extensively wounded. Costal respiration is an almost infallible sign of intraperitoneal injury. Much intraperitoneal bleeding calls for operative treatment just as much as injury of the bowels. In conclusion they cite the authors who repudiate immediate operative treatment for abdominal wounds in war and those who advocate it.

62. **Connection Between Gynecologic Affections and Insanity.**—The first part of this article was reviewed in these columns, p. 833. Fraenkel here comments on the surprising discovery that in 31 of his 37 cases of juvenile mental disease or feeblemindedness, the genital organs showed pronounced infantile conditions. There can be no question, he thinks, that both the genital and the mental abnormality are the consequences of one trouble, and this, he is convinced, is defective functioning on the part of the ovaries. Dementia praecox, imbecility, and epileptic insanity generally affect young persons during the stage of development, and there is much to sustain the assumption that lack of the normal ovarian secretion is what is wrong, keeping the girl from developing normally in body and mind. The logical consequence is that treatment should aim to supply the lacking ovarian stimulus. This can be done by grafting a fully developed and functioning ovary from another person, or by administering ovarian tissue extract. The hormone thus provided by organotherapy is far from being the equivalent of the natural hormone, but still it may have an unmistakable curative action. The genitals develop under it and assume a maturer aspect, and there is reason to hope that the brain may feel an impulse to further development. Abderhalden and Fauser have shown the close connection between the genital organs and the brain as evidenced by digestion of ovary and testicle tissue by the serum from persons with mental disease. The psychiatrists have long been giving ovarian preparations in catatonic conditions. Many of the features of catatonia closely resemble the "negativism" of dementia praecox, and the benefit from ovarian treatment is likewise due to the stimulus to further development imparted to the infantile genital organs and infantile brain. Attempts in this line are being made by Fraenkel and the results already are encouraging. Striking success cannot be anticipated with the present technic for ovarian treatment, he remarks, as the extract is obtained by a more or less destructive process; it is given by the wrong way, by the stomach instead of into the blood; it is not identical with the natural hormone; the doses are certainly too small and the exact amount not known, and the administration occurs unsystematically, not at the time and the place when and where it is most needed. Complete success cannot be realized until organotherapy conforms more to the natural processes, but theoretically it is rational.

63. **Xanthoma.**—Linser describes the clinical and histologic findings with xanthoma and remarks that correct differentiation is often of vital importance as the affection is so liable to be mistaken for syphilitic gumma, the erroneous treatment applied, and the patient depressed by the assumed presence of syphilis. Treatment apart from that of possibly coexistent diabetes can be only surgical. Recurrence in the cicatrix is rare. He never witnessed any benefit from sodium bicarbonate, even long continued.

64. **Chromogen Test in Diagnosis of Typhoid.**—Halbey was impressed with the fact that the response was positive in 9 cases of typhoid at each application of the test so long as the fever kept up. It was positive also in all cases of measles, scarlet fever, erysipelas and malaria. It was constantly negative, on the other hand, in 17 cases of pulmonary disease, even in advanced forms, and negative likewise with miliary tuberculosis. A positive reaction was thus obtained in 33 per cent. of the 52 patients tested. The technic is simple, merely the addition of 3 drops of a 1 per thousand solution of potassium permanganate to the beaker of urine diluted threefold with ordinary water. In case of the presence of urochromogen, the fluid turns a very bright yellow, the tint proportional to the chromogen content. The chromogen arises during destruction of tissue albumin, and is a sign of toxic disturbance of metabolism.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

July, XLII, No. 1, pp. 1-94

67 *Prophylaxis of Puerperal Fever by Lactic Acid Vaginal Douches. (Zur Prophylaxe endogener Wochenbettfieber mittels 5 proz. Milchsäurespülungen während der Schwangerschaft.) H. Thaler and H. Zuckermann.
68 Case of Ruptured Ovarian Pregnancy. M. Seedorff.
69 Behavior of the Uterus with Hemorrhage in the Ovaries. G. Lauth.

67. **Lactic Acid Douches in Prophylaxis of Puerperal Fever.**—Thaler and Zuckermann extol the advantages of transforming pathologic vaginal secretions to the normal type by systematic vaginal douches with 5 per thousand lactic acid solution toward the close of a pregnancy. This permits the woman to enter labor with the normal defensive processes in the vagina intact. They give the tabulated details of forty-six cases, with the microscopic findings before and after in six cases, showing the complete transformation of the pathologic type into the normal type in 95.6 per cent. of the cases. They emphasize in particular the transformation of the flora from the pathologic to the physiologic vaginal flora under the influence of the lactic acid. The aim of the treatment is not to sterilize the vagina but to promote the proliferation of the normal flora until the pathologic is crowded out. In 73 of 153 pregnant women examined the vaginal secretion was more or less abnormal, and in 46 in this group the lactic acid douches were given regularly for two or three weeks to an average of 18 douches. Delivery followed in from eight to fifty-six days. In all but 5 the puerperium was afebrile, and in these 5 the temperature ran up a little once or twice but without objective findings. In 3 of the 5 the interval between the last douche and delivery had been twenty-nine, forty, and fifty-six days. The protection conferred by the douches cannot always be counted on after the second or third week.

Münchener medizinische Wochenschrift, Munich

July 20, LXII, No. 29, pp. 973-1004

70 *Cryptogenous Fevers. A. Knoblauch and H. Quincke.
71 The Ninhydrin Reaction in Tuberculous Spinal Fluid. E. Nobel.
72 Improved Technic for Diathermy. (Diathermieschädigungen und ihre Vermeidung durch den Pulsator unter gleichzeitiger Erhöhung der therapeutischen Wirkung.) Bucky.
73 Elements in Diet that Enhance Susceptibility to Heat Stroke and Sun Stroke. (Sonnenstich — Hitzschlag.) F. Schanz.
74 Salvarsan in Tetanus. Rothfuchs.
75 Treatment and Prognosis of Wounds of the Skull in War. (Schädelschüsse.) Guleke.
76 Necessity for Prompt Operative Treatment of Abdominal Wounds. (Einige chirurgische Hauptgesichtspunkte.) Koerber.
77 Surgical Impressions at the Front. R. Fibich and A. E. Zimprich.
78 *Hypertonus of Muscles of Feet. (Der atavistische Spannungsfuss als Ursache von Fussbeschwerden und Felddienstuntüchtigkeit.) K. Hasebroek.
79 Typhoid in Prisoners' Camp. Wolff.
80 Treatment of Ankylosis of Shoulder. (Schultergelenkversteifung nach Schussverletzungen.) A. E. Stein.
81 Bicycle for the One-Legged. (Zweirad für Invalide.) J. Lewy.
82 Improvised Devices for Immobilization and Extension. (Zur Improvisationstechnik.) W. Rindfleisch.
83 *Sugar for Dressing Suppurating Wounds. Fackenheim.
84 *Alcohol-Hydrogen Dioxid for Dressing Suppurating Wounds. O. Hahn.
85 Stretcher Suspended from Pole Carried on Shoulders of Two Men. (Behelfstrage für den Schützengraben.) S. Markiewicz.

70. Acute Brief Fevers.—Knoblauch and Quincke report eleven cases of sudden fever affecting almost simultaneously a number of the nurses or attendants at a Frankfurt hospital. Pain in the right lower ribs was a constant symptom and kept up for six or seven days. The pain was sharp and radiated to the shoulder. There was high remittent fever, but no cause for it could be discovered and recovery was complete in a week. Conditions suggested that possibly the sting of some winged insect might have been responsible for this febrile affection, but no one was aware of having been bitten. In conclusion they discuss other types of ephemeral fevers, declaring that many cases of assumed "influenza" are more probably instances of cryptogenous fevers.

78. Hypertonicity of Muscles as Cause of Pain in the Feet.—Hasebroek refers to a congenital predisposition to excessive tonus in certain muscles as a comparatively frequent cause of severe pains in the feet of soldiers. Massage of the muscles involved, and an insole to support the foot, generally remedy the disturbance which he regards as an atavistic phenomenon.

83. Sugar for Dressing Wounds.—Fackenheim is enthusiastic over the rapid clearing of extensive suppurating wounds under the application of sugar, the way in which the granulations develop, and the manifest stimulation to regeneration of the epithelium. He powdered the wound with the sugar (Kristallzucker), tamponed loosely with gauze above and changed the dressings every second day. No contraindications or by-effects were observed in the 800 cases thus treated during the last four months.

84. Alcohol-Dioxid Dressing for Wounds.—Hahn tampons the wound loosely with gauze dipped in a mixture of 1 part alcohol and 2 parts hydrogen dioxid; then above this a layer of moist gauze and a perforated impermeable cover. The deepest layer of gauze is not changed for several days but is kept regularly moistened with the alcohol-dioxid mixture, and the results have been superior to those of all other methods in his experience.

Therapeutische Monatshefte, Berlin

June, XXIX, No. 6, pp. 293-356

86 *Influence of Diet on the Blood. (Einfluss der Ernährung auf das Blut.) C. von Noorden.
87 Extermination of Lice. (Kleiderlaus tötende Mittel.) S. Frankel.
88 Vaccine Therapy of Typhoid. (Therapeutischer Brief aus Ungarn.) N. Roth.
89 *Treatment of High Blood Pressure Must Aim to Remove the Cause. (Die Blutdrucksteigerung als Objekt der Therapie.) H. Strauss.
90 Radium Treatment of Hemorrhoids. C. von Noorden and A. Caan.
91 Breadmaking in Times of Peace. (Frage der Beibehaltung der hohen Ausmahlung von Getreide in Friedenszeiten und ihren Einfluss auf die Volksernährung.) V. Klopfer.
92 Thorium Treatment of Lymphatic Leukemia. M. Kaufmann.
93 Treatment of Convalescents from Dysentery. Roubitschek and Laufberger.

86. Influence of Food on the Blood.—Von Noorden remarks that science has but little accurate knowledge as to how the composition of the blood, its production and the prevention and cure of diseases of the blood are modified by the food, its amount and the form in which it is taken. The cautious reserve in the statements on these subjects by the highest authorities on the pathology of the blood is in striking contrast to the positive announcements as to the "blood-making properties," etc., of this or that form of food, advanced by the pseudo-scientific, the "popular science" articles and commercial interests. Science can make but few positive statements in this field. The effect of total deprivation of food or water is known. The fact also seems to be established that lack of albumin, with general undernourishment, favors the development of anemia. His own experience has convinced him that an albumin-poor and generally inadequate diet predisposes to anemia, particularly when there is a tendency to kidney disease. The latter alone tends to induce anemia. He has found anemia accompanying obesity so constantly that an over-rich, fat-forming diet cannot be regarded as a factor to count on in warding off or curing anemia. The blood seems to be subject—like the muscles and gland tissues—to laws of growth which stand under constitutional influences, and may work counter to impulses coming from the food. When there is no inhibition of this kind, abundant nourishment seems to promote production of blood. Albumin in particular may prove useful for persons with a tendency to anemia. He has encountered 58 cases in which corpulence was accompanied by a red count and hemoglobin percentage 5 to 8 per cent. above normal. These persons were all great meat-eaters, and he thinks there can be no doubt that the blood production had been stimulated by the large albumin proportion in the diet. This was demonstrated further by the hemoglobin percentage of 50 other persons, all great meat eaters: 4 had 90 to 95; 9, 96 to 100; 23, 101 to 105, and 4, 106 to 107 per cent. hemoglobin. Particular attention is called to these facts to warn against vegetarian principles being applied to the anemic as some physiologists are beginning to advocate. It has been his experience that forced feeding with nitrogen-free materials does not improve the blood, but often aggravates its condition. On the other hand, an ample supply of albumin, without overfeeding as to calories, favors concentration of the blood.

By estimating the total mass of the blood and comparing this with its concentration, important clinical information may be derived. The possibility of anemia from lack of iron has been established by Tartakowsky's research on animals. Chronic anemia was induced regularly in them by repeated venesection and feeding them with food containing little if any iron. Infants are liable likewise to develop anemia from lack of iron. Bunge has apparently established that iron accumulates in the fetus during the last months of intra-uterine existence so that the child is born with a reserve of iron to make up for the lack of iron in the breast milk. If the pregnant woman did not get iron enough in her food or for other reasons the fetus did not get its supply, the child is threatened with anemia. In later life it is exposed to the same danger when the food contains too little iron, as for instance when it gets only milk, fine flours and fruits. As a one-sided diet like this is often ordered with kidney disease, it is possible that the anemia with nephritis has merely been induced, or at least has been magnified, by the diet. In all the above the hemoglobin is reduced more than the number of reds, in proportion, just as in chlorosis, but there is also a certain degree of hydremia, which is not a feature of chlorotic blood. In short, iron-poor food may generate anemia in many conditions. It is generally an easy matter for the physician to determine whether a one-sided and iron-poor diet is responsible for the anemia. During the destruction of hemoglobin in infectious diseases, much of the iron is cast off by the bowels but some may be retained as a reserve to draw on later. In all protracted illnesses, the iron content of the food should be considered as well as the protein and calories. Milk, cream, rice, sugar and fruit juices may be an ideal diet for convalescents, but

it does not supply iron enough. Iron is also needed after severe hemorrhages. Chlorosis cannot be explained by an iron-poor diet, as it develops often on an abundant mixed diet.

Calcium and gelatin have won an established place for themselves in dietetic treatment of a primary tendency to hemorrhages, whatever the theoretic explanation may be. In the secondary hemorrhagic diathesis, as in chronic leukemia, sepsis, typhoid or cancer cachexia, a much varied diet of fresh vegetables and fruits is certainly worth a trial on the basis of what we now know of deficiency diseases. Von Noorden has had some cases of a hemorrhagic diathesis developing during convalescence from typhoid. After addition of fresh vegetables and fruit to the diet, the tendency to hemorrhage soon subsided.

89. **Treatment of High Blood Pressure.**—Strauss discusses the numerous causes for high blood pressure, saying that the forms of nervous origin are generally transient, except with exophthalmic goiter, in which a variably high pressure may keep up a long time. Obesity in itself does not raise the blood pressure, nor does diabetes. In these and with gout and other metabolism diseases, the high pressure is the result of arteriosclerosis. In general, however, high living predisposes to abnormally high blood pressure as it favors arteriosclerosis. From the clinical standpoint it is useful to distinguish between simple and complicated hyperpressure, that is, hypertonicity causing subjective symptoms. With sclerosis of the kidney, the high blood pressure seems to be a compensating phenomenon. The polyuria and hypertension in these cases, with the hypertrophy of the heart, aid in keeping the work of the kidneys on an approximately normal plane. The physician has only to guard against useless overtasking of the heart and ward off cerebral hemorrhage. In other words, keep a close rein over the kidney trouble, spare the heart as much as possible, and avoid everything that will unnecessarily send up the blood pressure. The entire mode of life should be regulated to exclude excitement, dietetic excesses and severe physical exertion, while ensuring opportunities for temporary relaxation, an hour's rest at noon, and avoidance of stimulants, extractives of meat, coffee and alcohol. Constipation should be kept under control by fruits and vegetables, avoiding those that induce flatulency. Straining at stool may send up the blood pressure by 10 or 20 mm. and cerebral hemorrhage may occur in consequence. Bed rest alone may reduce the blood pressure at least enough to put an end to the subjective symptoms from it.

Small doses of digitalis, not over 0.1 gm. per day, prove almost invariably useful and harmless in arteriosclerosis with high blood pressure and beginning cardiac insufficiency. Some of his patients have kept this up for years, alternating two weeks of these small doses of digitalis with two weeks of iodin. Spa treatment and physical measures benefit mainly by their favorable influence on the underlying trouble. The combination of a number of curative measures is particularly advantageous, and hence more can usually be accomplished in a sanatorium than in the home. As results of treatment are so much better in the earlier stages, he makes a point of examining the blood pressure in every patient and recording the findings. In this way the tendency is discovered and combated in its early stages. He has numbers of patients still living whose blood pressure was up to 180 mm. twelve to fifteen years ago. One patient with a pressure of 260 or 270 mm. was under his charge for five years before a brain vessel ruptured. A continuously high blood pressure without subjective symptoms—hypertonia simplex—may have a comparatively favorable prognosis.

Zentralblatt für Chirurgie, Leipzig

July 24, XLII, No. 30, pp. 529-544

94 Support on the Pelvis for Artificial Leg. (Ueber den Stützpunkt des künstlichen Beines am Becken.) B. Riedel.

Zentralblatt für Gynäkologie, Leipzig

July 24, XXXIX, No. 30, pp. 523-538

95 *Normal Pregnancy After Conservative Ovariotomy. H. Freund.

July 31, No. 31, pp. 539-554

96 *Extraperitoneal Cesarean Section for Impacted Trunk Presentation. (Extraperitonealer Kaiserschnitt wegen verschleppter Querlage.) O. Küstner.

95. **Normal Pregnancy After Conservative Ovariotomy.**—Freund slits the ovarian tumor its entire length by a median incision, and thus is able to inspect the ovary completely and detect any portion that is still sound. His method was described in these columns August 8, 1914, p. 579, but at that time there had been no consecutive pregnancy in any of the cases although he has been applying this method for four years to date. He now reports a normal pregnancy and delivery of a healthy child in one of the above cases. The patient had passed through one normal delivery and four years later a large hydatidiform mole was removed. Each ovary was found transformed into a large polycystoma, the tubes apparently normal. Eleven days after the mole operation, the left ovary was removed, and the right ovary was slit down to the hilum and opened wide. A patch about 1.5 by 2 cm. in size in which the follicles seemed to be normal was found near the pedicle of the ovary, and this was left while all the rest of the ovary was excised. The stump was sutured to close in this apparently normal patch, and ten months later the woman became pregnant, showing that by this means it is possible, even with a large cystoma, to detect and save enough functionally capable ovarian tissue for conception to occur later.

96. **Cesarean Section for Shoulder Presentation.**—Küstner comments on the grave danger to the fetus when the shoulder becomes impacted in the contracted uterus and version is thus rendered impossible. The fetus is usually dead before the malpresentation can be corrected, and this is inevitable when version is impossible unless the child can be extracted at once by a laparotomy. The chances for the mother are much better when the incision in the uterus can be made outside of the peritoneum, and for these reasons he delivered a woman by extraperitoneal cesarean section about twenty-four hours after the onset of labor and rupture of the bag of waters. The lower segment of the uterus was contracted so rigidly that version was out of the question. The fetus was in the dorso-posterior position and the incision in the uterus was made on the left side, the foot end of the child. The stretching of the cervix in this form of dystocia facilitates extraperitoneal cesarean section, but he was disagreeably surprised by the difficulty of version after the uterus had been opened. He did version with the (right) lower foot. During the extraction the left (upper) foot hit against the child's back and impeded extraction. If he had grasped both feet, the version would not have been impeded by the other foot. The modern low, extraperitoneal cesarean section thus permits the extraction of the child whole, even with impacted shoulder presentation, but the incision is in the cervix, the child in the body of the uterus, and version is necessary and facilitated by grasping both feet. This is imperative with the dorso-posterior position and can do no harm with the dorso-anterior.

Zentralblatt für innere Medizin, Leipzig

July 24, XXXVI, No. 30, pp. 469-484

97 Symptomatology of Aneurysm of Cerebral Artery. J. Löwy.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 4, XXXVI, No. 53, pp. 817-832

98 Micrococci in the Blood in Malta Fever. (Valore diagnostico dell'emocoltura nella febbre di Malta.) G. De Angelis.

99 Incarceration of Portion of One Wall of Intestine in Hernia. (Forma rara d' incarceramento erniario intestinale a pizzico.) N. Federici.

Pediatria, Naples

July, XXIII, No. 7, pp. 481-560

100 *Malignant Lymphogranuloma a Special Form of Tuberculosis. (Contributo alla conoscenza etiologica del linfogranuloma maligno.) G. Caronia.

101 Achondroplasia. (Caso di acondroplasia a tipo iperplastico.) R. Vaglio.

102 *Elimination of Hexamethylenamin in Disease of the Urinary Passages in Children. (L'eliminazione dell'urotropina.) A. Corica.

100. **Malignant Lymphogranuloma.**—Caronia reports two cases in which the clinical history and pathologic anatomic

findings were typical of malignant lymphogranuloma, and Much's granula form of the human tubercle bacillus was cultivated from the lesions. The torpid course and debility explained the negative response to the skin tuberculin test and to the deviation of complement test in both his cases.

102. **Elimination of Hexamethylenamin in Diseases of the Urinary Passages.**—Corica has been studying the elimination of hexamethylenamin in healthy children and in those with nephritis, as well as the action of the drug in the diseased kidney. In 11 healthy children the drug was found in the urine within half an hour, and the elimination kept up for from twenty to thirty-three hours. In 5 children with nephritis the drug appeared in the urine in half an hour but the elimination kept up for forty-six, fifty or eighty-five hours, the longest duration being in a child of 3 with postscarlatinal nephritis. In 5 other cases of postscarlatinal or acute nephritis, comparative tests were made with this drug and with lactose and with iodin. The lactose did not appear in the urine until after two hours and the elimination dragged along for seventy hours in one case; in the others only for fifteen up to twenty-four. The iodin did not appear in the urine until after two hours; the elimination continued for from twenty-eight to sixty hours. In health, lactose is completely eliminated in nine hours and iodin in forty or fifty hours. His research has convinced him that hexamethylenamin is eliminated through the glomeruli. Also that its action on the kidneys depends on the nature of the kidney disease. If it is of toxic origin, the drug has less effect, its action being practically restricted to the warding off of possible ascending invasion by bacteria from the bladder. Invasion of this kind is favored by the scanty production of urine in the toxic cases. With infectious nephritis, the drug has an antiseptic action. In addition to this, as it transforms the alkaline to an acid reaction, it tends to ward off ulterior development of microorganisms along the urinary passages below.

Policlinico, Rome

August 1, XXII, No. 31, pp. 1021-1056

103 Welfare Work for the Maimed in War. (Per l'assistenza ai reduci storpi e mutilati.) R. Dalla Vedova.
104 Method for Localization of Metal Foreign Bodies. V. Maragliano.
105 Portable Roentgen Apparatus. M. Serena.
106 Benefit for the Health from Active Campaign Service. (I benefizi della vita di guerra sulle condizioni di salute dei soldati.) P. Sabella.
107 Blood Clots in Stool Simulating Helminths. (Grumi sanguigni simulanti parassiti intestinali.) M. C. Francaviglia.
108 *Reflex Epilepsy from Intestinal Helminthiasis. M. C. Francaviglia.

July, Medical Section, No. 7, pp. 293-340

109 Tests for Antitetanus Serum. (Intorno ai criteri scientifici per giudicare in modo rapido e sicuro sulla reale efficacia del siero antitetanico.) G. Tizzoni and P. Perrucci.
110 Acute Yellow Atrophy of the Liver a Manifestation of General Toxi-Infection. (Etiologia dell'atrofia gialla acuta del fegato.) T. Portano.
111 Differential Diagnosis Between Exudates and Effusions. B. Maiolo. Continued.

108. **Reflex Epilepsy from Helminths.**—In Francaviglia's case inherited syphilis, alcoholism and malaria could be positively excluded, the patient, a young man of 19 having always been in robust health except for the ordinary "children's diseases," and with no bad habits, not even smoking. He was a good student but not a burner of the midnight oil. While in a class one morning he was suddenly seized with dizziness and had convulsions resembling an epileptic seizure. After ten minutes of tonic and clonic spasms, he fell into profound coma, the pupils dilated and rigid, and did not regain consciousness for an hour and memory not until later. This attack was followed by three others at intervals of an hour or hour and a half—an actual status epilepticus. Milder attacks followed in the next few days. By excluding other causes the attending physician made the presumptive diagnosis of helminth intoxication, and after expulsion of two ascarides under santonin there was no further trouble and there has been no return of symptoms since. Francaviglia says that the ascaris acts both by its endogenous toxins and by mechanical irritation as it burrows its head in the mucosa and thus exposes and irritates nerve terminals.

Tumori, Cagliari

May-June IV, No. 6, pp. 633-748

112 *Mammary Secretion with Uterine Myomas. S. Scaglione.
113 Serum of the Pregnant and of Parturients Has No Action on Implants of Embryonal Tissue in Rats. (Azione del siero della donna gravida ed in stato puerperale sugli innesti tessuti embrionarii.) S. Scaglione.
114 Histogenesis of Primary Cancer of the Lung. A. Businco and G. Trogu.
115 Cancer of the Skull in Boy of Fifteen. (Mixo-encondro-sarcoma della volta cranica a sviluppo contemporaneo endocranico ed esocranico.) G. Bolognesi.
116 *Hemorrhagic Discharge from the Breast an Indication for Excision. (Sul valore sintomatico e prognostico dello scolo emorrhagico della mammella.) A. Cimoroni.
117 Tabulated Data of Myomas of the Stomach; 140 Cases. (Tabella casistica dei tumori a fibre muscolari liscie dello stomaco.) F. Nassetti. Commenced in No. 5.

112. **Mammary Secretion with Myoma of Uterus.**—Two women of 44, several years after their last pregnancy, began to have hemorrhages from the uterus and a milk-like secretion could be squeezed from the breasts. Several myomas were found in the uterus. Extracts of scraps of the uterus tissue and of the myoma were injected into rabbits. After injection of the myoma extract into virgin rabbits a mammary secretion was inaugurated. The uterus extract was inert. In both the women the mammary secretion ceased completely after hysterectomy.

116. **Hemorrhagic Secretion from the Mamma.**—Cimoroni reports two cases in which a yellowish, reddish or blackish secretion from one breast attracted attention. The droplets stained the linen, but there were no signs of anything else wrong for two or three months but then there were occasional pains in the breast. Palpation was negative but the breast was resected in each case and the microscope revealed multiple incipient papillomas in one case and incipient cystic disease in the other.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 10, II, No. 2, pp. 469-556

118 *Production of Bilirubin Outside the Liver. (Studien over anhepatische galkleurstofvorming. IV-V.) A. A. H. Van den Bergh and I. Snapper.
119 Diagnosis of Epidemic Cerebrospinal Meningitis. B. P. Sormani.
120 *Case of Anilin Poisoning. (Anilinevergiftiging.) J. de Hartogh, Jr.

July 17, No. 3, pp. 557-636

121 *Gritting the Teeth a Sign Usually of Adenoid Vegetations. C. E. Benjamins.
122 *Mercuric Chlorid Poisoning, Anuria and Uremia. A. F. Soer.
123 New Lines for Cancer Research. (Nieuwe banen voor het kankeronderzoek.) T. J. Stomps.
124 Revival of Asphyxiated New-Born by Inflation of Air. (Behandeling van asphyxie van den pasgeborene door rechtstreeksche luchtinblazing.) C. A. J. Quant.

118. **Production of Bile Pigment in Spleen.**—Van den Bergh and Snapper have previously reported some cases of progressive anemia in which there was evident destruction of red corpuscles in the spleen with consequent formation of bilirubin without the participation of the liver in its production. In a case reported here the spleen was removed in treatment of progressive anemia. Marked improvement followed but still, nearly a year later, there is considerable destruction of blood corpuscles with pronounced bilirubinemia, showing that the spleen was not the only organ involved in the destruction of the blood. Some experiments on dogs confirmed this production of bilirubin in the spleen. Dogs given toxic doses of diamino-toluene developed bilirubinemia but it was not the consequence of abnormal destruction of blood, and the spleen did not enlarge. On the other hand, dogs treated with phenylhydrazin developed actual progressive perfidious anemia; the spleen enlarged, and much more bilirubin was found in the splenic vein than in the splenic artery.

120. **Anilin Poisoning.**—A young man in robust health left home to take part in an athletic contest, but before it began he became extremely cyanotic, his lips, hands and nails very blue and his skin bluish, with headache, and he vomited. The pulse was 90, and the respiration accelerated, and there was some delirium. No cause for this sudden illness could be discovered until Hartogh suspected anilin poisoning, and examined the young man's shoes. They were new gymnasium slippers and had been white but the day before he had had them colored black. He had been wear-

ing the dyed shoes about an hour and a half when the symptoms developed. Under stimulants, fresh air and cold water to the head, recovery gradually followed.

Gritting the Teeth a Sign of Adenoid Vegetations.—Benjamins states that in 500 cases of adenoid vegetations he has encountered, gritting of the teeth at night was noted in 34.4 per cent.; catarrh of the upper air passages in 46.4 per cent.; disturbance in hearing in 41 per cent., and enlarged tonsils in 25.2 per cent.; 31.6 per cent. had enuresis. The gritting of the teeth was recorded for 45 children under 5, for 78 from 5 to 10, for 42 between 10 and 15, and for 6 between 15 and 20, and for one person over 20. Other causes may be responsible for teeth gritting in the neuropathic, but it always suggests possible adenoids.

122. **Mercuric Chlorid Poisoning.**—Soer's two cases confirm anew that when complete anuria appears in mercuric chlorid poisoning there is practically no hope for the patient. Death follows almost inevitably within one or at most two weeks, whether or not there are any signs of uremia.

Svenska Läkaresällskapets Handlingar, Stockholm

XLI, No. 2, pp. 319-410. Last indexed July 24, p. 372

125 *Occupational Diseases of the Skin. (Om hudens yrkessjukdomar.) J. Strandberg.

126 *Sarcoma of the Breast. A. Rubenson.

125. **Industrial Diseases and Injuries of the Skin.**—Strandberg emphasizes the importance of occupational affections of the skin and the necessity for better knowledge of them by physicians in general. About 50 pages are devoted to an epitome of the leading literature on the subject, and he then describes the details of 55 cases from his own service, including 35 of industrial eczema, 14 of toxic dermatitis, and 2 each of injury from a caustic, changes in the nails or chilblains. One man of 56, a painter, has had recurring eczema of the hands in such a severe form that hospital treatment was required, and in the course of less than twelve years he had taken twenty-five courses of hospital treatment, to a total of 1,488 days, over four years in all. The man has cost the state many hundreds of dollars in the hospital treatment, besides the medicines doled out to him in the dispensaries. Strandberg cites this case as an illustration of the economic necessity for enforcing prophylactic measures or at least instructing the workmen in regard to the special dangers to be avoided. Ample opportunity for washing and bathing with warm water should be given those working with toxic substances, and rubber gloves or other protecting devices should be provided. Prophylactic measures have done away with many industrial diseases, such as glassblowers' syphilis (from use of common tube), but there is still room for improvement in many industries. It may prove possible to denature alcohol in some way that would be less injurious to the hands than the present methods.

126. **Sarcoma of the Breast.**—Rubenson quotes five surgeons, who have reported or compiled each from 150 to 800 cases of tumors of the breast, to the effect that sarcomas formed only from 5.26 to 9.3 per cent. of the total. Nearly seven pages are devoted to tabulation of the details of fifteen cases that have been published in full in the literature, and he adds six new cases to the list, discussing the general characteristics of this form of cancer of the breast. The course is liable to be more variable with sarcoma than with carcinoma, and the general health is sometimes less affected. Some of the patients look well, notwithstanding recurring sarcoma and metastases. In a few instances both breasts were affected. There is usually less pain with sarcoma than with carcinoma, probably because it spreads more on the surface with less infiltration than with carcinoma. The regional glands are not involved so often as with carcinoma; they were apparently intact in all his cases.

Ugeskrift for Læger, Copenhagen

July 22, LXXVII, No. 29, pp. 1169-1224

127 *Ascites and Its Surgical Treatment. A. Blad. Commenced in No. 28.

128 Case of Chronic Intermittent Partial Heart Block. C. Lundsgaard and M. Fenger.

129 Danish Physicians in the Middle Ages. (Danske Læger i Middelalderen.) J. W. S. Johnsson.

127. **Ascites and Its Surgical Treatment.**—Blad discusses the best means to relieve and cure ascites, based on its etiology and course. According to the literature, about 40 per cent. have been cured of those to whom the Talma operation has been applied. The reason why it is not universally successful is because the outcome depends on the functional capacity of the liver. We have no means for ascertaining this exactly beforehand, and hence there will always be an undependable factor in the outcome. It seems rational and on a sound anatomic and physiologic basis, with ascites from stasis in the portal system. There is no justification for it, however, with ascites of other origin, and yet the records show that it has been applied in numbers of such cases, and this has kept down its ratio of cures. It has helped in many cases of ascites of other origin, the benefit probably being due to the eliminating of some secondary portal stasis. Another factor of moment for the outcome is whether or not the heart is strong enough to keep the blood circulating. In some of the unsuccessful cases the heart was evidently too weak to overcome the obstacles. If the omentum is small and shriveled, it does not respond properly to the operation and if there are already adhesions to the abdominal wall it is useless to do omentopexy. As to contraindications, the patient's general condition is the best guide.

The subject of continuous autodrainage of ascites is still in its infancy. No general conclusions are possible as yet; but the results already obtained are certainly promising, especially as it requires such an insignificant operation in contrast to the laparotomy for the Talma operation. It is applicable for all forms of ascites, and the effect becomes evident at once. The drain-tube technic seems to have given the best results, but the best material for it is still a question. Fish-bladder tubes were entirely absorbed in five months in the experiments on animals; hernial sac tissue in four months. Autoplastic fascia tissue gave the best results in the experiments on animals; it heals smoothly in place, takes nourishment from the tissues and lasts a long time.

On the basis of the above considerations, when called on to treat a case of ascites of obscure origin, he took a square fascia flap from the thigh, rolled it into a tube and inserted this tube in an incision in the right lumbar region, through the muscles, into the peritoneum. It was sutured with silk to the peritoneum opening, into which it projected a little. The muscles were not sutured over it, but merely the superficial fascia, with aluminum bronze wire. The tube was then fastened with a few stitches to a pocket made in the superficial fascia. The tube was about 3 cm. long by 1.5 cm. in diameter, and the ascites fluid poured out through it as the patient, a man of 60, lay on his side. The skin was then sutured above it and the man speedily recovered. The skin in the region of the tube became edematous showing that the ascitic fluid was draining into it. The man succumbed to the progress of a cancer in the stomach, and necropsy showed that the drain operation had been a complete success; the fascia had healed in place without reaction; the tube was freely permeable and the crevices in the muscles were full of ascitic fluid that had drained into them. The edges of the rolled up flap did not quite meet on top as no attempt was made to have the tube absolutely cylindrical. By having it debouche in the lumbar region there was less danger of hernia than at other points, and less chance of the tube becoming obstructed. Ascitic fluid is a colloidal fluid to a certain extent, as it contains albuminous substances, and hence the blood vessels do not absorb it. This is the reason, as he explains, why diverting the ascitic fluid away from the peritoneal cavity into muscle tissue provides better conditions for its absorption. The muscles may be regarded as the water reservoirs of the body, and it is logical to drain surplus fluid into muscle tissue. With ascites, the lumbar region has several advantages. In case the ascites is the result of portal stasis, the drainage operation might be supplemented by a Talma operation. Blad did the two operations on a man of 55 with ascites and atrophic cirrhosis of the liver, but the two operations at one sitting proved too much for the patient and he failed to rally, dying the next day in collapse.